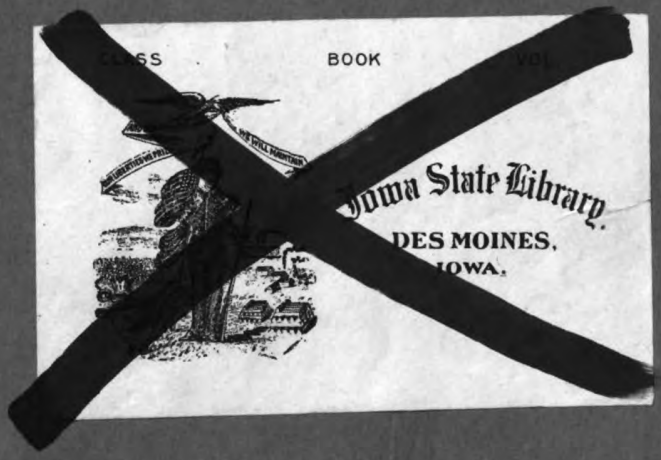
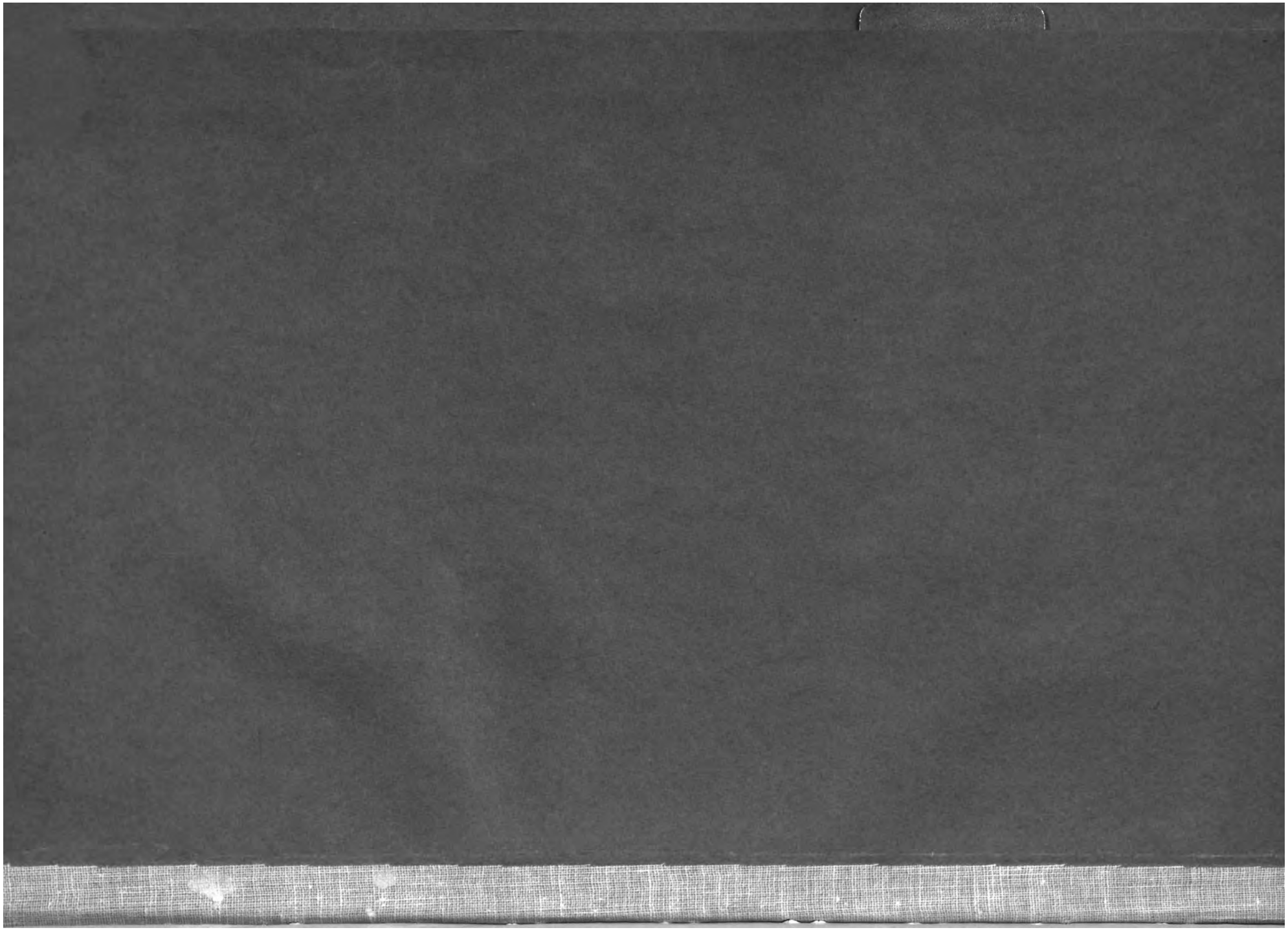
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WITHDRAWN

An Address
ON
GUNSHOT WOUNDS AND INJURIES OF THE SPINAL CORD.

Delivered before the Medical Society of London on March 20th, 1916,

BY JAMES COLLIER, M.D. LOND., F.R.C.P. LOND.,

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MR. PRESIDENT AND GENTLEMEN,—I must express my best thanks to you, sir, and to the secretaries of the Medical Society of London for inviting me to open this discussion upon gunshot wounds and other injuries of the spinal cord. The very large number of such cases under our observation during the past 18 months have given us a hitherto unparalleled opportunity to investigate the physiology and pathology of the human spinal cord and the symptoms resulting from its injury. Many new facts have been brought to light and much of our former knowledge thrown into a fresh perspective, and these when time has allowed of their proper working out cannot but cause a valuable advance of our understanding of the spinal cord in conditions of devolution. Necessarily in this country our observations have been made upon cases some time after receipt of the injury, but if we have been denied a scrutiny of the early symptoms we have the advantage of the excellent account of the early conditions given by Colonel Gordon Holmes in the Goulstonian lectures before the Royal College of Physicians. The subject is so large a one that it is impossible that we can in this discussion cover more than a tithe of the points which are of great interest, and therefore I shall make no attempt to deal systematically with the subject, but I shall put before you such items of my individual experience as I hope will excite interest and stimulate discussion. I think it is important in this discussion that any case of injury to the spinal cord which has an important bearing upon the subject should be brought in, whatever may have been the cause of the injury. I am going to introduce one such case myself, and I hope that those who follow me will do so if they wish.

The subjects to which I wish especially to draw attention and to ask for remarks upon are these: (1) The nature and mechanism of production of the lesions; (2) the state of the reflexes and of muscle tone in the affected region; (3) the distinction between root lesions and central lesions of the cord; (4) disturbances of sensibility; (5) prognostic indications; (6) the occurrence of rare and unusual phenomena.

THE NATURE OF THE LESIONS.

The lesions that I have met with have been caused by high-velocity bullets, shrapnel, fragments of shell casing, and by the concussion of high explosives without any external wound. A classification of the lesions, though arbitrary, is, I think, useful in considering the mode in which they are produced. Often more than one kind of lesion is present. The following is a rough classification. 1. Direct lesions. I would define as a direct lesion any lesion resulting from the passage of a missile across the spinal canal whether it touch the spinal cord or not. 2. Indirect lesions: (*a*) Those due to the in-driving of bone, &c., into the spinal canal. (*b*) Impact lesions where the missile strikes against the bony wall of the spinal canal. (*c*) Concussion lesions from the shock of high explosions. 3. Secondary lesions: perithecal and intrathecal hæmorrhage, medullary hæmorrhage and thrombosis, meningitis, œdema. These lesions are important as the cause of the deepening of symptoms often at a considerable time after the injury. 4. Remote lesions which may be found anywhere in the spinal cord and chiefly near the surface: spots of necrosis, sieve-like rarefaction, punctiform hæmorrhages, œdema, swelling of axons. These lesions are produced by the sudden raising of the intraspinal pressure caused by the passage of the missiles through the intraspinal space or by a general concussion effect. They are well marked in cases of concussion without external wound.

The mode of production of the *direct injury* is clear. The passage of a fast-moving projectile through a tissue causes not only a heat effect generated by the friction but an intense raising of the pressure in the tissues for some distance round the track, and if the bullet cross the spinal canal, which contains a fluid pressure, this momentary and severe pressure effect is transmitted to the whole of the nervous system confined within the cerebro-spinal space. The cerebro-spinal space being an elastic cavity the increase of pressure caused by the passage of the bullet will be greatest at the site of the track and will decrease in proportion to the distance from the track, but will be greater below the site of passage than above it, because the lower portion of the spinal canal is more closed and therefore less elastic. The damage to the spinal cord even when the bullet does not touch the cord nor lacerate the membranes is therefore greatest where the bullet has crossed, but it extends for a considerable distance above and below this. Lesions of the cord in places remote from the chief seat of injury are not infrequently found which are attributable to this increase of pressure, and these are always more marked in the distal part of the spinal cord. The intracranial effect of this increase of pressure is the immediate loss of consciousness which is sometimes met with, and more often in cervical injuries than in those lower down. Possibly the initial loss of consciousness may be an index that the bullet traversed the spinal canal. I think that this certainly holds good for the cervical region, for in three of my cases of cervical injury where consciousness was not lost, although the initial symptoms were severe, complete recovery occurred. It seems to me impossible that a bullet can cross the spinal canal without causing the most severe and irreparable of transverse lesions, and I argue that in all the cases where relative or complete recovery occurs the lesion has been an indirect one: either an impact lesion or due to the in-driving of bone. It is likely that a bullet does not so often cross the spinal canal, but is more often deflected by the bony wall.

Mode of production of impact lesion.—The passage of a high velocity bullet in the immediate vicinity of the spinal canal or the impact of a projectile upon the bones forming the spinal canal may cause lesions of the spinal cord sometimes very severe notwithstanding that the walls of this canal remain intact. How are these local concussion lesions produced? The anatomical relations of the spinal cord practically forbid any such displacement of the cord within the canal as could bring it

in contact with the bony wall and so bruise either directly or by contrecoup. Colonel Gordon Holmes has shown that these impact lesions show their greatest intensity immediately under the point of impact and closest to the bullet track as the case may be. I submit the following explanation of the way in which these indirect local lesions of the cord are produced. The contents of the spinal canal which intervene between its parietes and the spinal cord, and made up of the perithecal fat and vessels, the theca and the cerebro-spinal fluid, may be regarded as fluid, and the pressure within the spinal canal as a fluid pressure, contained in a vessel which has one rigid wall, the spinal canal, and one elastic wall, the compressible vessels of the cord, &c. Any lines of force either from excessive vibration, from impact, or from compression transmitted from one spot in the rigid wall will have their most intense effect upon the nearest point of the elastic wall—i.e., the nearest spot in the spinal cord and little elsewhere, the force becoming rapidly spent upon the elastic wall as it radiates. The damage to the spinal cord produced in this way by indirect injury may be from the most severe with symptoms of a total transverse lesion with no recovery, to the slightest with complete recovery. The two following cases are examples of the latter:—

CASE 1.—Patient was hit in left posterior triangle of neck with a rifle bullet. He at once fell paralysed in left arm and leg, but was never unconscious. He came under my care a fortnight after the injury. The skiagram showed the rifle bullet apparently lodged vertically in the odontoid process of the axis. Movements of head and neck were perfectly free and there was no pain. The physical signs were those of strictly unilateral lesion of the left side of the cord at the level of the fifth cervical segment together with a lesion of left fifth and sixth cervical roots. The left arm and leg were spastic, the muscles supplied by the fifth and sixth cervical roots excepted. The left abdominal reflex was absent and the left plantar reflex extensor. The sensory loss was of the usual Brown-Séquard type. It was obvious from his story that he was recovering rapidly when he came under observation both as regards the root lesion and as regards the spinal cord lesion. He made an uninterrupted recovery in the course of two months. In this case the root lesion was probably caused by bruising of the cord formed by the fifth and sixth cervical roots in the posterior triangle and the spinal lesion by the impact of the bullet against the left side of the fourth cervical arch which received a serious jar in that it deflected the bullet from a horizontal to a vertical course. This case shows that the injury to the cord from impact against the bone is directly contiguous to the site of impact.

CASE 2.—Patient was shot by a rifle bullet which traversed the spinal column transversely at the level of the eighth dorsal segment. He was immediately paralysed and completely anæsthetic below the umbilicus. Within 24 hours he began to pass urine naturally, and when he came under my care a week later he had no sphincter trouble, the sensory loss was relative only, and there was some feeble volitional movement of all the muscles of both legs. He has made good progress, and now at the end of three months he can walk well and can run, but somewhat stiffly. The extensor plantar reflexes are still present. It seems to me impossible that the bullet in this case can have entered the spinal canal on account of the small damage to the spinal cord and the completeness of recovery, and I consider that this case was one of an impact lesion from the passage of a high-velocity bullet in the immediate vicinity of the spinal canal.

Concussion lesions.—Severe indirect injuries of the spinal cord may occur from the bursting of high-explosive shells when the back is turned towards the force of explosion without any external wound occurring, without any detectable lesion of the bones, and even without bruising of the soft tissues. I have seen three such cases, of which the following are examples:—

CASE 3.—Patient, crawling forward to the attack on his hands and knees, was for the moment resting prone, with his body stretched upon the ground, when a high-explosive shell burst over him. His consciousness was not affected, and he was able to give me exact details of what happened. At the moment of the bursting of the shell he experienced a sharp tingling sensation in the legs and immediately lost all knowledge of the lower part of his body and legs. He felt no blow upon the back and no pain. He was quite sure that the force of the explosion did not shift his trunk. He told me that the absence of any bruising upon his back was remarked upon by the doctors who examined him in the first place and for the two weeks following his injury. His initial condition was one of total transverse lesion of the cord at the level of the ninth dorsal segment. When I saw him some three months later there had been practically no improvement in his condition. The skiagram showed no abnormality in the bones.

CASE 4.—The history was identical with that of the foregoing case. The patient was, however, rendered unconscious and there was very marked bruising of the back, but the skiagram showed no signs of injury to the spinal column. The clinical picture was that of total transverse lesion of the spinal cord, and there was practically no recovery.

I was not able to follow any of these cases to their termination. In such cases as these, where severe spinal lesions have been produced by the force of high explosion at a distance without any external wound, it is possible to conceive that there has been such distortion of the spinal column as might produce a subluxation of the vertebræ which became immediately reduced, and that during this subluxation the bony rings which make up the spinal canal crossed to such an extent as to produce a severe local transverse lesion of the cord. That such a subluxation is possible has been proved experimentally upon the cadaver, and that it can severely pinch the spinal cord has also been proved, and there is much evidence in the records that such a subluxation, immediately reduced, is one of the lesions that may occur in cases of broken back. I have examined one such case in which a total transverse lesion resulted from a fall from a haystack. The spinal cord was almost severed within the membranes, and although I macerated the bones I could find no sign of fracture. I do not, however, see that there is any evidence in favour of the occurrence of such a subluxation in the cases under consideration, and the histories of the above cases and of several others that I have been told of are against it. We must therefore regard these lesions as impact lesions. It seems remarkable that the impact of the force of the explosion upon the dorsal surface of the body could be sufficient to produce local spinal concussion and a sharply local lesion of the cord without any evidence of severe bruising of the skin and soft tissues. In my three cases and in several others that I have heard of the lesion was in the lower dorsal region. It is a point of great interest as to whether such severe local lesions from explosion occur in other regions, and I should like to ask those present, and especially Dr. Wilson, who is going to tell us about a case that recovered, and Major Mott, who is going to show us the lesions actually produced by this form of injury, in what region of the spinal cord the chief lesion has been found in their cases.

Root lesions.—Sometimes the lesions produced by projectiles affect the spinal roots after they have left the thecal space to a much greater extent than they affect the spinal cord and thecal contents. This seems to me to be the case when there has been much fracture and crushing of the bone, and especially in the region of the transverse processes. There is usually much swelling and œdema in the injured region of the spine. Such root lesions are not entirely due to direct injury, for they may be widely spread when the injury is comparatively local. They may result from subperiosteal hæmorrhages and periosteal swelling, which strangle the roots in the intervertebral foramina, or from pachymeningeal hæmorrhage. Of this last condition—pachymeningeal hæmorrhage—I have had an interesting example.

CASE 5.—Patient was hit by a piece of shrapnel in right lumbar region. The projectile crossed the lumbar spines and came to rest at the left side of the third lumbar vertebral body. There was immediate paralysis of the legs and sphincters with total sensory loss. He came under my care 14 days after the injury. There was total flaccid palsy in both legs in the sciatic supply, with much wasting and loss of faradic excitability. There was feeble power in the quadriceps and adductor groups on both sides. The knee-jerks were absent. There was complete sensory loss over L. 4, 5, S. 1, 2, 3, 4, 5 on both sides. There was complete loss of sphincter control with severe cystitis. There was considerable swelling in the central region of the lower back, and the spines of the third and fourth lumbar vertebræ could be felt to be loose. A laminectomy was performed but was not followed by any marked improvement, though some sensibility was gained in the fourth lumbar areas of both sides and in the fifth on the right side, and after some months the patient succumbed to renal infection.

My diagnosis in this case was that of a lesion of the cauda equina. The necropsy showed that the cauda equina within the theca had not been injured. The anterior roots of the cauda were normal from their points of origin from the cord to their exits from the theca, while the posterior roots from the fourth lumbar downwards were extremely atrophied and grey. The lateral walls of the theca were much thickened, and along the line of the root exits were as much as one quarter of an inch thick. This thickened thecal wall presented in section a sandwich-like appearance, a white tough outer and inner layer enclosing a reddish-yellow softer layer. This condition appeared to have strangled all the sacral and lower lumbar roots, but it did not cease there. It extended along the line of the roots on both sides as high as the upper dorsal region, gradually lessening in intensity, and towards its upper limits the inner surface of the theca was definitely hæmatoidin-stained. The anterior and posterior walls of the theca were only involved in the region of the lumbar enlargement and the cauda equina, and then to a much slighter extent than were the lateral walls along the line of the root exits. It seems to me likely that this condition of pachymeningitis arose from hæmorrhage into the extrathecal roots where these are enclosed in the tube-like prolongations of the theca, and that this hæmorrhage had spread like a dissecting aneurysm between the layers of the spinal theca and had strangled the roots.

Intrathecal hæmorrhage.—Among the many lesions of the spinal cord met with resulting from bullet wounds there are two upon which I should especially like to comment. The first of these lesions is intrathecal hæmorrhage. Blood effused into a free thecal space finds its way with the stream of cerebro-spinal fluid into the lower part of the thecal space around the cauda equina and lumbo-sacral enlargement, and if massive in quantity may distend that space, causing pressure upon the roots and epiconus, and clotting there may cause such matting and cicatrisation as may completely destroy by pressure and evascularisation the cauda equina, and if it extend high enough the lumbar enlargement as well. Smaller effusions by clotting and the formation of condensing adhesions may cause local signs of nerve-root involvement. In a severe condition of this kind where there has been extensive intrathecal hæmorrhage—due, let us say, to a lesion of the mid-dorsal region—the physical signs in the lower extremities may resemble exactly those due to a complete lesion of the cauda equina or of the lumbo-sacral enlargement. In the less severe condition the local deposit and subsequent cicatrisation of blood-clot round individual roots of the cauda may cause physical signs difficult of explanation unless the possibility of the occurrence of intrathecal hæmorrhage and its results are kept in mind. The following is a case in point:—

CASE 6.—Patient was wounded by a bullet traversing spinal canal at level of sixth dorsal segment. Seen two months after the injury, he presented total paralysis with complete sensory loss below the sixth dorsal area, with complete absence of all reflex action and severe wasting of the muscles, none of which responded to faradism. The necropsy showed the caudal part of the theca filled by a mass almost as hard as cartilage and somewhat like cartilage in appearance. It presented no appearance of hæmatoidin staining. Microscopic examination showed it to be an organising coagulum in which the remains of the degenerate nerve roots could be seen embedded. The lumbo-sacral enlargement itself was not embedded in this hard substance, but it showed severe degeneration throughout, evidently from the strangling of the root vessels. Higher up and extending to the sixth dorsal segment the cord was surrounded by a ring of old blood-clot still coloured and firmly adherent both to theca and to cord. The lesion of the cord at the sixth dorsal level was by no means a complete transverse lesion.

It is easy to conceive of cases of thecal hæmorrhage where the matting round the cauda equina is less severe and gives rise to partial lesions of the cauda only, and therefore in cases where the bullet lesion of the spinal cord is above the lumbar enlargement and unusual conditions of reflexes, spasm and contracture are present in the legs it is well to consider whether a condition of thecal hæmorrhage and matting of the cauda equina may not exist. Local wasting of muscles and local loss of faradic excitability may be indications that such a condition exists. The early diagnosis of this condition in such a stage as to allow of the removal of the blood by lumbar puncture and washing out with citrate solution is apparently impossible, for the initial aspect of nearly all the spinal lesions resulting from bullets is that of total transverse lesion, and therefore the development and deepening of the signs of involvement of the cauda equina cannot be detected. In one civilian case, however, I was able to observe the development of such symptoms:—

CASE 7.—Patient had a fracture-dislocation of seventh dorsal vertebra resulting from a fall. He was received into hospital within ten minutes of the accident and was found to have complete paralysis of both legs. Sensation was not deeply affected. The knee-jerks were present and there was an extensor plantar on both sides. Two hours later, when again examined, there was complete flaccid palsy with complete loss of all reflexes and complete loss of sensibility. Unfortunately this was before the days of lumbar puncture. Immediate operation was advised, but the surgeon in whose charge the patient was preferred to wait until the shock had passed off, and when he operated many days later found the theca and cauda equina densely filled with adherent and irremovable clot.

The second remarkable condition that I wish especially to refer to is a condition of *total necrosis of the distal segment* of the spinal cord which was found in one of my patients.

CASE 8.—The lesion was a total transverse lesion at the level of the third dorsal segment. There was total paralysis, total sensory loss and total reflex loss below the lesion, and all faradic excitability was lost. This patient survived for three months. The whole of the distal segment of the cord was completely necrotic and much shrunken, and resembled a strip of greenish yellow wet wash-leather. There was no sign of hæmorrhage, extrathecal or intrathecal, and no sign of any septic process.

I have seen one civilian case in which a condition exactly comparable to the above occurred from fracture-dislocation at the level of the sixth cervical segment in a child. The injury occurred from traction upon the neck during delivery, and the patient survived ten weeks. This case was recorded by the late Dr. Charles Beevor, the pathological report being by Dr. F. E. Batten. Such lesions are very difficult to explain, but the most plausible theory that I can put forward is that a spreading thrombosis throughout the blood-vessels of the distal segment occurs. When one considers that both the anterior and posterior spinal arteries were severed at the site of the injury, and that the injury in both these cases was high in the cord cutting off most of the splanchnic supply and therefore entailing a low blood pressure, and that the tearing of the theca must have deranged the relations of the cerebro-spinal fluid, the possibility of the occurrence of such a spreading thrombosis is conceivable.

REFLEX ACTION.

Time does not permit me to make more than the briefest reference to the condition of the reflexes and of the muscle tone, to contractures and positions of the limbs and to the electrical excitability of the muscles which obtain in the cases under consideration, though the study of these phenomena is one of the most important. It is usually held that the initial condition of reflex action after the occurrence of severe lesion of the spinal cord is that there is complete loss of both jerks and superficial reflexes, or that if the loss is not complete the only sign of reflex action left is a feeble flexor response occurring in the toes, only obtainable from plantar stimulation, and that the early presence of the extensor response or its early return is indicative that the lesion is not complete and is of good prognostic import. I have seen one case which negatives this view. The patient fell from a considerable height, striking his back against the corner of a wall, crushing in four pairs of the upper dorsal laminæ. An operation was immediately performed and showed that some three segments of the spinal cord had been utterly destroyed, the upper and lower ends being found separated by some inches. I examined the patient within a few hours of the injury and repeatedly until his death on the fourth day after the accident, and during this time an extensor response was always present. Colonel Gordon Holmes has laid it down very clearly that the condition of the plantar reflexes in all the cases which he has examined shortly after the injury has been either that they are completely absent or that there is a reduced flexion response, but he is careful to add that his examinations have taken place not earlier than the second day after the injury.

I submit that there may be four consecutive stages in the condition of the plantar reflexes following a transverse lesion of the cord: 1. An initial extensor response. 2. Either a complete absence of any reflex, which may be the result of shock or of isolation alteration, or a reduced flexion reflex which is the result of isolation alteration which may come on rapidly. 3. The extensor response which when persistent is indicative of a less severe lesion or alternatively of more recovery than the reduced flexion reflex. 4. The normal flexion reflex which returns when recovery is complete. I have repeatedly observed the successive changes from no reflex to the reduced flexion response, and from this to the extensor response in cases where some improvement is occurring; and conversely I have seen the extensor response change to the reduced flexion response and the subsequent loss of all reflex action in severe cases which were not improving, and where the only attributable cause for such a change seemed to be the long-standing isolation of the distal segment of the cord. The condition of the plantar reflex is therefore an index of the severity of the damage to the spinal cord and an important early indication as to whether recovery is occurring or not.

Colonel Gordon Holmes has made the very interesting suggestion that the simple flexion of the toes which can be obtained only by stimulating the sole in cases of severe transverse lesions of the cord, and which I have called the "reduced flexor response," is a unisegmental reflex involving the first sacral segment only, and that when the physiological vitality of the lumbar enlargement is much reduced by isolation from the higher nervous system the only reflex response that can be obtained is a unisegmental reflex. My observations incline me to support strongly Colonel Gordon Holmes's theory. I have repeatedly noticed, in a case where some recovery is occurring and where the reduced flexor response is changing to the extensor response, that a minimal stimulus will produce flexion of the toes and a more severe stimulus will result in extension of the toes, or that there is first flexion and subsequent extension of the toes, but never the reverse. That is to say, the threshold for the unisegmental reflex is lower as one would expect.

Another most important point that the experience of this war has brought out is that the influence of the higher nervous system upon the reflex action and muscle tone of the spinal cord is strictly homolateral so far as the cord is concerned. That is to say, that a total unilateral lesion of the cord produces complete flaccidity with loss of knee- and ankle-jerk and reduction of superficial reflex upon the side of the lesion. This will explain those cases in which we meet with an extensor response upon one side and a reduced flexor response upon the other, in that one has a transverse lesion more complete upon one side than upon the other.

Contracture is a phenomenon which is intimately associated with the condition of reflex action. In these paraplegic cases with which we are dealing there are three conditions of contracture of the feet: 1. The dropped foot with retracted toes. This is the ordinary pes cavus of spastic states—the crystallisation of the extensor response. 2. The retracted foot with retracted toes. The calcaneus position is often extreme. The ankle-jerk is always lost and the anterior tibial-jerk marked. An extensor plantar reflex is always present. 3. The dropped foot with dropped toes, the position being similar to that of peripheral neuritis. The plantar reflex is either absent or there is a reduced flexor response.

I have observed in several cases the dropped foot with dropped toes gradually change into the spastic pes cavus with a change of the plantar reflex from the reduced flexor to the extensor type in cases where some improvement has taken place, and therefore I consider that the dropped foot with dropped toes indicates a more complete transverse lesion and that it is produced by a relatively greater muscular tone in the flexors of the toes than elsewhere, and that it is associated with the reduced flexor response just as the pes cavus is associated with the extensor response in less severe transverse lesions.

The calcaneus position with retracted toes is a very remarkable phenomenon. It has been persistent in those cases in which I have met with it, and has been always associated with loss of knee- and ankle-jerk and increase of anterior tibial and hamstring jerks. The extensor response and active withdrawal reflex have always been present. I have not examined such a case pathologically, but in one such case which Colonel Armour explored for me the chief lesion seemed to be a division of the ventral half of the dorsal cord.

I have carefully examined the electrical excitability of the calf muscles and of the anterior tibial muscles in extreme cases of the equinus and calcaneus positions, and have found that there is no difference in the faradic excitability of these muscle groups, thus proving that these positions of feet and toes are not due to any secondary lesions of the cauda equina or lumbo-sacral enlargement.

I have met with one curious reflex phenomenon in the leg in a way comparable to the curious reflex which Colonel Gordon Holmes has observed in the arm in a case of cervical lesion. My case was one of a mid-dorsal lesion, total upon the right side of the cord and severe upon the left. The right leg was completely flaccid and the only sign of reflex action present was that on stimulating the sole, after a latent period of four seconds or more, a feeble flexion and adduction of the thigh occurred. This reflex was easily tired out, and was only obtainable on gentle stimulation of the sole.

The physical signs obtaining in the lower limbs in transverse lesions of the cord seem to be the same whatever the level of the lesion above the lumbar enlargement.

There is one question which I would like to put to each of the speakers who follow me: What is the ultimate condition of the paralysed region in cases of total transverse lesion of the cord which are long survived? My own suggestion is that the slow process of physiological deterioration which we call "isolation dystrophy" may reach such a point that no signs of activity of the lumbar enlargement remain.

To the usual types of paraplegia resulting from lesions of the spinal cord and representing different degrees of isolation of the distal segment—namely, "paralysis in extension" and "paralysis in flexion"—I think that we might speak of a third type—that of complete flaccid paralysis. For it is from this stage of complete flaccid paralysis that the other types successively develop when improvement is occurring, and to this type they successively return when there is an increasing lesion or from long-standing isolation of the distal segment. There is, of course, no sharp separation between these types; they merge into one another gradually.

Distinction between Root Lesions and Central Lesions.

The diagnosis between lesions of the roots and lesions of the central grey matter is sometimes impossible, as, for example, when a lesion of either of these structures is complete. It is sometimes quite simple when a single root or so is damaged and there is characteristic sensory and motor loss in the area of distribution of the damaged root. In many cases, however, the diagnosis is far from a simple matter, and in some of these both lesions may exist together. The following points may be useful in the diagnosis: 1. In the cervical region extensive root lesions are only met with when there is severe injury of the bones, especially of the transverse processes and spines, and these are recognisable by deformity, swelling and œdema, and radiography in the absence of these signs, an atrophic palsy of the arms is probably the result of a central lesion, if it is extensive. 2. In central lesions the upper limit of the sensory loss is a line more or less transverse to the axis of the limb—that is to say, the sensory loss is of the "glove" or "stocking" pattern, in contrast to the more or less longitudinal limitation which obtains in root lesions. 3. In the cervical region a relative escape of the long columns or early signs of recovery in these with severe paralysis of the upper limbs is in favour of a root lesion, and may suggest the correct diagnosis at an early stage. 4. In the lumbo-sacral region the most certain indication is the level of the wound of the spine if this can be determined with certainty.

Disturbances of Sensibility.

The chief points of interest in this connexion are the paths taken by the sensory fibres in their spinal course, the sensory loss resulting from unilateral lesions, and the explanation of remote pains. The usually accepted paths of sensation in the spinal cord are as follows: 1. The path for touch is a double one, in the homolateral dorsal column and in the crossed lateral column. 2. Pain, heat, and cold are conveyed by separate fibres in the crossed ventrolateral column. 3. Sense of position, of passive movement, of vibration and recognition of form and of the compass points are conveyed in the homolateral dorsal column. The crossing of the sensory fibres in the cord occupies one to two segments in the lower dorsal region, but increasingly more segments as the cord is ascended, so that in the cervical region some five segments are occupied by the crossing. There is no crossing below the last dorsal segment. The path for painful and thermal stimuli crosses more rapidly than does touch. Consequently a unilateral lesion of the cord does not produce a Brown-Séquard syndrome when the lesion is at the level of the first lumbar segment or below this.

The symptoms of the unilateral lesion are that there is motor paralysis, loss of sense of position and of passive movement and of appreciation of vibration, form, and compasses upon the same side below the lesion, and loss of pain, heat, and cold upon the opposite side. The bilateral loss in the region of the lesion from the involvement of both right and left crossing fibres is narrower for pain and temperature than for touch. This bilateral loss is much narrower in the dorsal than in the cervical regions on account of the increasing obliquity of the crossing fibres. My observations have been in accord with the above scheme with one exception. In the majority of my cases of unilateral lesion of the cord the vibration sense has been lost or most affected upon the opposite side, and this has obtained both in severe and in slight lesions. I must admit that I have no pathological evidence in such a case.

Remote pains are very obstinate in some cases. Their mode of origin is obscure. Obviously, they are only met with in those cases where the sensory conducting tracts are relatively intact. The usual symptom-complex that I have met with is that there is a transverse lesion in the dorsal region with good recovery of sensibility and some recovery of power in the legs. There is considerable rigidity of the legs and phasic flexor spasms are invariably present, and there is more sphincter trouble present than the condition of recovery of motion and sensation would lead one to expect. There are three kinds of pain: dull persistent pain, sharp lancinating pains, and cramp. They are said always to disappear if the patient recovers. My experience is that they certainly persist if he does not recover.

There are three possible explanations of these pains: 1. That they may be caused by irritation of the sensory tracts in the region of the lesion. 2. That they may be caused by meningeal adhesions and matting of the cauda equina by the organisation of intrathecal extravasation of blood. 3. That they may be the result of the muscular rigidity and flexor spasms. Colonel Gordon Holmes is in support of the first of these causes, since in some cases the pain is distributed from the lesion downwards to the feet. The similarity of these pains to those which obtain in conditions of chronic spinal meningitis suggests that meningeal adhesions and

irritation of the roots are present in some of the cases. The fact that they disappear as recovery advances and persist if there is no further recovery points to the condition of local muscular spasm as being the chief cause in some of the cases.

RARE SYMPTOMS.

Among the rare symptoms which have been described, hypothermia and anuria in cases of cervical lesion and vomiting in mid-dorsal lesions have not come under my observation. These are early symptoms and are either rapidly fatal or they do not persist, so that we do not see them in the later stages. Pyrexia and tachycardia in cervical cases have both come under my notice, as has also polyuria in dorsal cases. Herpes zoster from injury to the root ganglia is necessarily an early symptom and has not occurred in any of my cases. Neither have I observed anything approaching the remarkable rhythmic movements which have occurred early, in so large a proportion of Colonel Holmes's cases of lesions in the upper lumbar region. I have had one remarkable case of cervical shivering.

CASE 9.—In this patient, who came under my observation within a week of his injury, the cervical laminæ were smashed in upon the cervical enlargement and there was total paralysis of all the limbs, the arms being flaccid evidently from a central lesion, but the legs were extended and spastic. Laminectomy was performed but no improvement took place. The legs slowly became flaccid. Cystitis developed and death ensued in ten weeks. The shivering involved all the muscles above the lesion; it was not apparent during the first few weeks, but it developed insidiously and became intense as the patient went down hill. For a time it was almost continuous and was a most distressing symptom. It was accompanied by the most profuse sweating of the head and neck and by marked signs of splanchnic palsy, abdominal distension, and low blood pressure.

Cervical shivering has been met with in lesions of the lower cervical and the upper three dorsal segments only and the lesions in all the cases have been severe.

PROGNOSTIC INDICATIONS.

In nearly all the cases the initial clinical picture is that of a total lesion of the cord, and in the early stages for prognostic indications as to how much of the transverse lesion is anatomical and how much physiological we must look to the condition of the reflexes. The early reappearance of the plantar reflex if lost at first and the change from the flexor to the extensor type soon after the seventh day, or the presence of an extensor response earlier than this, are certain indications that the lesion is partial and that some recovery will occur. Persistent loss of the plantar reflex and long-lasting flexor response are indications that the lesion is severe and that useful recovery is highly improbable. Early return of the knee-jerk and of the ankle-jerk is of good prognostic import. Even in the less severe cases the knee- and ankle-jerks do not return before the fourth day, and their reappearance before this date gives hope that complete recovery may occur. Colonel Gordon Holmes is of opinion that the presence of an extensor response is a certain indication that the lesion is incomplete. These remarks apply to each leg individually. The condition of the reflexes on one side has no bearing as to the recovery of the opposite limb. The further prognostic indications are simple. They depend upon the date of return and the rapidity of return of sphincter control, of sensibility, and of motor power. Early return of sphincter control is one of the best of signs. In two cases where recovery has been complete, and in two other cases where recovery has been nearly complete, some sphincter control returned within a week of the injury.

THE DISSOCIATION OF CUTANEOUS SENSATIONS IN INJURIES TO PERIPHERAL NERVES.

BY DONALD E. CORE, M.D. MANCH., M.R.C.P. LOND.,

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DURING the past eighteen months a series of observations have been carried out on the patients of the 2nd Western General Hospital for the purpose of comparing the relationship to each other of the areas of anæsthesia to different forms of cutaneous stimuli resulting from injuries to the peripheral nerves. A preliminary communication will be of interest. It has been found that the comparison of the area of sensory loss to the touch of a small brush with that to the prick of a sharp steel needle gives valuable information as regards the kind of injury from which the affected nerve is suffering.

In testing cutaneous sensation with different forms of stimuli it is not common to find an exact correspondence of the respective areas of sensory loss, and this is especially true for the types of sensation represented by light brushing of the skin and gentle pricking. The kind of brush used throughout in these observations has been that sold by Messrs. Winsor and Newton under the name of "crow sable." This method is rough when compared with the use of von Frey's hair æsthesiometer, yet such a brush, when suitably mounted in a metal handle, is capable of producing a very delicate form of skin stimulus. The other form, gentle pricking of the skin with a sharp steel needle, was employed in such a way that the pressure used was just enough to evoke a feeling of pain when a corresponding area of skin on the opposite limb was touched in the same way.

Nerve injuries may be complete or incomplete and the latter group comprises a number of injuries, varying from partial severing of the nerve with more or less implication of the remaining fibres in the resulting fibrous tissue, to pure compression without any anatomical division. Although it is easy in most cases to classify a nerve injury as "severe" or "slight," it is not easy in my experience to make quite sure that the lesion is or is not complete in cases of the first of these groups, from the extent and intensity of the symptoms alone. Often enough, motor and sensory loss that appeared from their severity to indicate a completely divided nerve have been shown later to have been due to an incomplete division. The motor symptoms and the sensory loss are not in themselves enough to settle the question, whereas a comparison of the areas of anæsthesia to the two forms of stimuli mentioned above, in the majority of cases, is.

The study of complete nerve injuries is best carried out in post-operative cases, in which the completeness of the division is certain. For access to this class of case I am indebted to Lieutenant-Colonel J. W. Smith, Lieutenant-Colonel W. Thorburn, Major J. Howson Ray, and Captain E. D. Telford.

Complete Division of a Nerve.

When a nerve trunk has been completely divided the following condition is found in the field of its distribution: a centrally situated area of profound sensory loss and a peripheral zone of loss to the more delicate forms of stimuli. If this peripheral zone be examined with the brush and needle in the

manner described above it will be found that the loss of sensation to brush is more extensive than that to the needle. Figs. 1 and 2 are examples of such cases (Fig. 1) being from a young officer whose median nerve had been resected by Lieutenant-Colonel Thorburn, and Fig. 2 from a case of ulnar nerve resection performed by Lieutenant-Colonel Smith.

Compression of a Nerve.

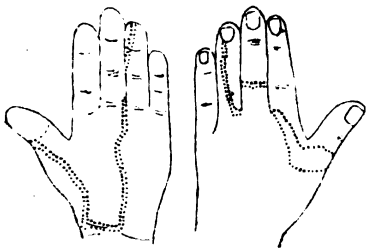
In cases of pure compression without any anatomical division of the nerve fibres the reverse holds, and there is a dissociation of sensation in which the loss to needle-point is greater than that to brush. In the majority of cases this is very definite indeed, the patient under examination saying that in the intermediate area he cannot feel the pain of the prick, although he can feel the touch of the needle. The following is taken from a very instructive case of this kind. The patient was a private who complained of loss of sensation and dryness of the skin over the inner side of the forearm on the left side with weakness of the small muscles of the left hand. There was no wound to account for his symptoms and a radiograph showed the presence of a cervical rib on the *right* side and something that was described as an abnormal ossification about the first rib on the left side, the side of the anæsthesia. The dissociation of sensation in this anæsthetic area was: Loss to needle-point more extensive than that to brush. At the operation, which was performed by Captain Telford, there was found a normal first rib on the left side, exerting compression on the branch of the first dorsal root passing to the brachial plexus; this contribution from the first dorsal was abnormally big. Relief of the compression was followed the day after by sweating in the anæsthetic area, a condition that had been absent for months. In other words, this dissociation of sensation, loss to needle-point more extensive than that to brush, was due to compression of the nerve fibres in this case, and from other patients that I have seen I have come to the conclusion that this form of dissociation is characteristic of compression and is against division of the nerve, certainly against complete division.

In the two types of cases described above complete division and pure compression, the marks made in mapping out the two areas of sensory loss will be found to remain equidistant from each other, but a number of cases are met with in which this equidistance is not maintained. Two such variations are commonly met with.

1. The types of dissociation are mixed; for part of the area of anæsthesia there is the dissociation of complete division, and for the remainder that of compression. This leads to a "lateral displacement" of the two areas of sensory loss. In some of these cases this relationship is due to the implication of two nerves in the wound, innervating adjacent areas of skin; one is divided and one compressed, and the loss to brush falls without and within that to needle-point respectively. Fig. 3 is a case of this description. The wound was a severe one on the inner side of the left arm just above the elbow; the humerus had been injured and the median and radial nerves involved. The median area showed the dissociation of complete division, the small muscles of the thenar eminence were paralysed and wasted, and the reaction of degeneration was present. The radial nerve area showed a dissociation of compression; the pressure of a blunted object was appreciated.

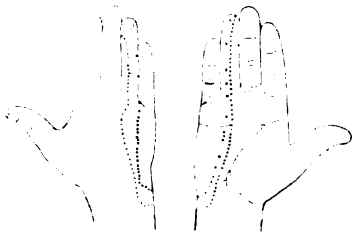
In other cases of this type the anæsthesia indicates the injury of one nerve only, and yet the dissociation is of this mixed type. Further investigation is required for these cases, but I am strongly of the opinion that they are due to a partial division of the nerve with compression of the remaining undivided fibres. This view is strengthened after reading the paper by Captain Wilfred Harris in THE LANCET of Nov. 13th, 1915, p. 1073, where the writer describes a case in which he found reason to believe that in the median nerve there was a separation of fibres destined to innervate the dorsum of the fingers from those running to the palmar aspect of the hand; and that this separation took place early in the nerve trunk. If this separation exists as a rule in nerve trunks, then it is quite probable that an incomplete division of the nerve would lead to the form of dissociation under consideration.

FIG. 1.



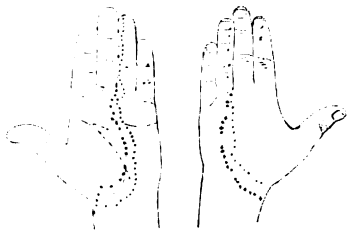
The dots (outer line) represent the limits of anæsthesia to brush touch; the crosses the limits of that to needle-prick.

FIG. 2.



The dots and crosses have the same significance as in Fig. 1.

FIG. 3.



The dots and crosses have the same significance as in the preceding figures.

2. In this type the limits of the areas of sensory loss to brush and needle-point respectively approach and recede, so that they show an undulating or wavy relationship to each other. For the most part the dissociation is that of compression, the needle-point loss falling without the brush loss; in some cases, however, the limiting edges of the two sensory losses frequently cross each other. In yet another variety of this type the edges show a tendency to coincide for a considerable part of their course.

It is not quite easy to assign the true cause to these forms of dissociation, other than to say that they are not due to complete division nor to pure compression. They are found most often, I think, in cases that are "hanging fire" for some cause or other, and the outlook in such cases is not good.

Summarising these results, then, I would lay emphasis on the statement that it is possible in the great majority of cases to diagnose the condition of the affected nerve from the dissociation of cutaneous sensations met with.

In complete division the loss to brush is more extensive than that to needle-point (cutaneous pain).

In pure compression the loss to brush is less extensive than that to needle-point.

A dissociation characteristic of complete division associated with one significant of compression is occasionally met with. This leads to a "lateral displacement" of the two areas of sensory loss; it is met with when more than one nerve is injured, and when the nerves involved supply contiguous areas of the skin. It indicates the complete division of one of these and the compression of the other. When such a dissociation is met with in the territory of one nerve it is possible that it is the result of partial division of the nerve with compression of the undivided fibres.

An undulating form of dissociation, where the limiting edges of the two areas of sensory loss approach and recede or constantly cross each other, is met with in cases that are at a standstill. No satisfactory explanation has as yet been arrived at for this type.

In certain areas there is no dissociation; the two areas of sensory loss coincide. I have not found this common except in lesions of the external popliteal nerve.

In the course of the above investigation several cases were seen that differed from the majority of cases of nerve injury in that pain was a prominent symptom. In many of the cases dealt with a certain amount of discomfort was present, but in those under discussion now the pain has certain characteristics that put them into a class by themselves. Such pain is intense; it is associated with extreme tenderness over the affected parts: it is badly localised. The patient does not give any precise description of its whereabouts, but can only say vaguely that it is in the palm of the hand or the sole of the foot, as the case may be. The pain is of a burning, tingling character and reacts variably to hot and cold applications. My experience of these cases is that cold is preferred in the majority rather than heat. The condition is associated with incomplete injuries of the nerve affected, and the nerves most commonly affected in this way are the median and the great sciatic.

If the history of a case of this kind is asked for, it will generally be found that the pain and tenderness did not appear for some little time after the wound, and the sequence of symptoms during the course of the case is instructive. The sensory loss increases in extent and intensity during the period of the pain; when the pain subsides, as it does in the course of time, what at the time of the injury was a comparatively slight sensory loss, at the time of subsidence is that of a practically complete nerve division, the type of dissociation most frequently met with being the wavy variety. Trophic changes are usually prominent in cases of this kind.

If a part of the nerve affected be excised at the site of the injury, there is found a diffuse intraneural fibrosis. This fibrosis is distinct from the perineural fibrosis or implication of the trunk in scar tissue, and is to be looked upon as the cause of the pain and tenderness. It is a progressive condition, and ultimately leads to the loss of conductivity of the nerve affected, in the absence of suitable treatment. Intraneural fibrosis of this kind does not occur in cases of primary complete division; it is liable to occur in nerves that have been partially divided and that are associated for the greater part of their length with soft tissues—nerves that are associated with bones will be compressed too rapidly in the majority of cases for the intraneural fibrosis to develop. The median and sciatic nerves are thus specially prone to the condition.

The dissociation of certain of the cutaneous sensations as a result of injuries to nerves, whether due to complete division or to compression, opens up many points of interest, notably the cause of the different degrees of vulnerability of nerve fibres and the bearing of this on the dissociations that are to be found in conditions other than peripheral nerve injuries. These points, however, are out of place in a communication of this kind; they will be dealt with in a future paper.

In these investigations I have been associated throughout with Dr. J. S. B. Stopford, of the Anatomy Department of the University of Manchester. The existence of the dissociations described above was recognised early, and we decided to devote our attention to their significance. The division of work was such that Dr. Stopford saw for the most part the post-operative cases and I saw those that had not been operated upon; on comparing our findings Dr. Stopford suggested that this might account for the two forms of dissociation described above. Every case that we have examined since then has strengthed our conviction that this is the true explanation of these two forms of dissociation. The bearing of our observations on the subject of treatment is being dealt with by Dr. Stopford in a paper which I am informed is about to be published.[1]

GUNSHOT INJURIES OF THE PERIPHERAL NERVES: THE SYNDROME OF COMPRESSION.

BY JOHN S. B. STOPFORD, M.D. MANCH.,
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THE numerous examples of injury to the peripheral nerves in our military hospitals probably provide more problems than any other class of case, and the controversies about the advisability of surgical interference are still maintained in this and other countries. Contact with these cases makes it apparent that critical observations and further investigations are necessary in order to obtain the highest percentage of good functional results with the shortest periods of inactivity.

At the outset most cases exhibit a complete interruption of conduction in the affected nerve below the site of the injury, but even at this time the anatomical diagnosis may be obscured either by superadded functional manifestations (especially in lesions of the clavicular region) or damage to one or more other nerves. The latter complication produces greater difficulty later, as, owing to the frequent variation in severity of the injury inflicted upon the individual nerves, it is not unusual to get early partial recovery in one which causes an irregular anatomical distribution of the motor and sensory symptoms.

Owing to the profound initial symptoms obscuring the extent and character of the injury, and the risk of sepsis, it is universally considered advisable to withhold operative measures until the wounds are soundly healed and the nerve has had a reasonable opportunity of demonstrating signs of recovery. There is considerable divergence of opinion as to the length of this period because it is impossible to enunciate any hard-and-fast rule. Each case ought to be decided on the results of careful regular clinical examinations, and it is hoped that some of

[1] The paper referred to commences on this page.

the points raised in this paper may be helpful at this stage. During the important period of observation the paralysed muscles must be fully and constantly relaxed by splints, and daily massage and passive movements practised in order to encourage recovery and prevent contractures.

From the observation (on behalf of the Medical Research Committee) of upwards of 90 cases in the hospitals of the 2nd Western Command, it is suggested that the following factors must be considered as influencing the prognosis and consequently the treatment.

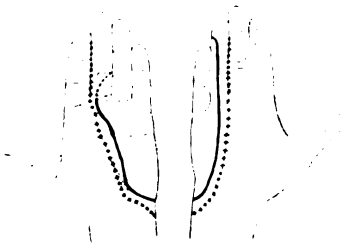
1. The extent, character, and distance from the periphery of the injury. Extensive damage to the surrounding structures increases the formation of scar tissue, which by its contraction is liable to strangle the nerve. Irregular missiles, as shell casing, tend to lacerate the nerves themselves more than bullets. A nerve which is in a state of tension at the time of the reception of the injury is more likely to be torn than one which is lying slack, and consequently the position of the limb influences slightly the predisposition to laceration. It is well known that peripheral injuries of nerves have a better prognosis than more central ones in the region of the nerve roots.

2. Such complications as fracture and sepsis obviously add to the gravity of the prognosis. They both magnify the risk of secondary implication of the nerve in either callus or fibrous tissue.

3. The treatment before the case comes under observation is also important, as failure to relax the paralysed muscles during the early stages appears to be a very potent cause of delay in recovery.

4. The amount of cicatricial tissue formed around the nerve. Excessive fibrosis and the frequency of incomplete division constitute, to a considerable extent, the differences between war injuries of nerves and those encountered in civil practice. The effect of fibrous constriction during healing is most significant in the study of these cases, and its influence upon prognosis and treatment cannot easily be over-emphasised.

FIG. 1.



Analgesia (crosses) and anæsthesia (line) in Case 1 before operation.

FIG. 2.



Analgesia and anæsthesia in Case 1 after resection.

For convenience of discussion the clinical progress, in a large proportion of nerve injuries, may be said to follow one of the four following courses (although, it must be understood, it is not possible to include a few cases exhibiting several complications in such a graphic manner).

(*a*) Improvement seen in the sensory manifestations within a few weeks, followed by restoration of tone and voluntary contraction in the paralysed muscles. This is succeeded by a steady increase in power until there is a complete recovery within four to eight months. The cases following this course are probably examples of physiological division, the missile having passed close to the nerve without dividing any fibres and the wound healing without any compression of the nerve.

(*b*) No improvement of any form even after four to six months. All of these cases are clinically examples of complete anatomical division, and surgical means alone can procure any recovery.

In these two diverse groups the treatment is obvious, but in the next considerable difficulties are encountered.

(*c*) Fairly rapid improvement in the sensory or motor symptoms, or both, up to a point when further progress becomes more tardy but very slowly continues. These are possibly instances of incomplete anatomical division, but the divided fibres regenerate because they are in good apposition, and there is a minimal amount of cicatricial tissue. Surgery cannot accelerate the recovery of this group and the essential point is to differentiate it from the succeeding one. As Sherren[1] has shown, in cases of incomplete division the recovery of epicritic and protopathic sensibility is simultaneous.

(*d*) Improvement, which abruptly ceases or is followed by a relapse. This is an important group and contains a considerable number of cases. The relapse, as may be anticipated, is almost invariably due to compression of the nerve by fibrous tissue or callus.

In the cases of relapse or sudden cessation of all recovery the nerve is found on exposure to be compressed by fibrous tissue, or to contain a fibroma or extensive intraneural scar. The progress or regeneration is interrupted by the excessive formation of fibrous tissue, which usually necessitates neurolysis or excision of the fibroma with suture of the divided fibres, and therefore it is of the utmost importance to be able to diagnose this class of case as soon as possible from those in the previous group, where recovery will generally occur without surgical intervention.

From my own experience it seems possible to recognise the presence of compression of a nerve in most cases by means of the simplest clinical tests for the cutaneous sensibility to "light touch" and "pain" in its sensory distribution. The following cases illustrate this possibility.

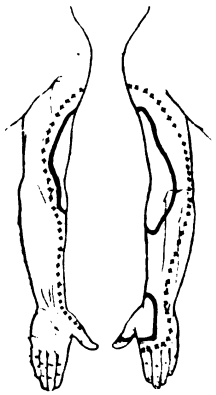
CASE 1.—Private —— received on May 9th, 1915, a gunshot injury on the inner side of the left arm about 2 inches above the internal condyle of the humerus. He was first seen by me on Sept. 15th, when there was a complete paralysis of all the muscles supplied by the ulnar nerve and sensory symptoms indicated in Fig. 1. It will be immediately noticed that the analgesia was more extensive than the anæsthesia (lightest touch). He had suffered from a burning pain in the palm of the hand for the previous two months, but this was diminishing in intensity and totally disappeared about the end of September. No improvement occurred and he was operated on by Captain H. Buck on Nov. 12th. At the operation the nerve was found to be firmly adherent to the inner head of triceps; its most internal fibres had been divided and a fibroma had developed between their lacerated ends. A few apparently normal fibres were to be seen on the outer side. About one inch of the nerve with the fibroma was resected and the divided ends sutured and protected with a covering of fat. Microscopic examination of the excised piece showed three bundles of nerve fibres intact, but the rest had been strangled by the dense fibrous tissue. Sensation was tested six days after the operation, and it was found that the analgesia was now less extensive than the anæsthesia as shown in Fig. 2 (the dissociation is the reverse of that seen in Fig. 1, before operation).

CASE 2.—Private —— received on August 8th a shell injury of the left shoulder, the piece entering just below the spine of the scapula and emerging through the inner third

[1] J. Sherren; Injuries of Nerves and their Treatment.

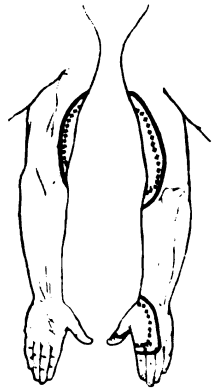
of the clavicle, causing a comminuted fracture of that bone. There was immediate paralysis of the whole arm. In about four weeks he was able to flex the fingers slightly, and a little later succeeded in slowly flexing the elbow. About this time he suffered a good deal from a severe pain along the outer side of the arm, and this was found to be more intense when the limb was warm. When examined on Nov. 22nd there was paralysis of the clavicular portion of the pectoralis major, deltoid and extensors of the wrist, thumb and fingers, with paresis of the triceps. The objective sensory manifestations are demonstrated by Fig. 3, in which

FIG. 3.



Analgesia and anæsthesia in Case 2 before neurolysis.

FIG. 4.

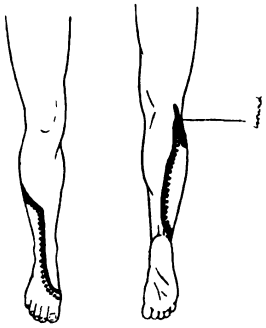


Analgesia and anæsthesia in Case 2 a fortnight after neurolysis.

it will be seen the analgesia is much more extensive than the anæsthesia. At the operation, performed by Captain Buck, the posterior cord of the brachial plexus was found to be strongly adherent to the posterior aspect of the clavicle in the region of the fracture. No evidence could be found of any division of nerve fibres. When examined two weeks after the operation it was found that the type of dissociation in the sensory symptoms had been reversed. (Fig. 4.) A fortnight later there was scarcely any anæsthesia or analgesia, and slight voluntary contraction of the deltoid was seen. Improvement is continuing.

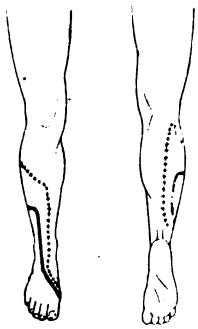
CASE 3.—Private —— received a gunshot wound of the right leg, which caused an extensive linear wound along the inner border of the biceps tendon, extending about 4½ inches proximally from the head of the fibula. The wound became very septic and took nearly three months to heal. When examined before the wound had healed he complained of severe dragging pain in the foot and had

FIG. 5.



Analgesia and anæsthesia in Case 3 before the wound had healed.

FIG. 6.



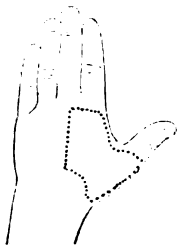
Analgesia and anæsthesia in Case 3 after the relapse.

paralysis of the anterior tibial and peroneal muscles. On testing the sensibility it was found that the losses to "light touch" and "pain" respectively were almost coterminous (Fig. 5), the condition usually found in complete division of the external popliteal nerve. During the next few weeks there was a gradual recession of the proximal limit of the anæsthetic and analgesic areas and some voluntary contraction in the extensor longus hallucis and extensor longus digitorum, but this was only maintained until about a fortnight after the wound had healed when a relapse occurred. The pain ceased, there was no longer any voluntary contraction in the anterior tibial muscle and the analgesic area was found to be very considerably greater than the area of anæsthesia (Fig. 6), which was not quite so extensive as at the outset. At the operation Captain E. D. Telford found the external popliteal nerve incompletely divided and embedded in an enormous mass of hard fibrous tissue and it was found necessary to resect a portion of the nerve. Unfortunately, I was unable to again examine this case after the operation owing to its transfer to a distant hospital.

The following two cases show more clearly the development and effect of compression on a peripheral nerve.

CASE 4.—Rifleman —— received on June 25th a shell wound on the outer side of the left biceps tendon and in front of the external condyle of the humerus. It was an uncomplicated flesh wound, and at first there were no manifestations of any nerve injury. The wound rapidly healed, and soon after it became sound he experienced difficulty in raising his wrist. This became gradually worse, until he was quite unable to extend his wrist, thumb, or fingers. When examined at this time he had complete flaccid paralysis, with wasting of all the muscles supplied by the posterior interosseous nerve, and complained of pain in the thumb and dorsum of the hand, but there were no objective sensory symptoms. In a few weeks the pain subsided and an analgesia, whose distribution is demonstrated in Fig. 7, appeared. There was no loss to light touch. This condition persisted for one month, during which time the paralysed muscles were constantly relaxed on a splint and regularly massaged. At the end of this time the extensors of the wrist exhibited signs of tone, and later a little voluntary contraction. This was succeeded by a gradual reduction in the area of analgesia, and now there are no sensory manifestations and full power has practically returned in the affected muscles.

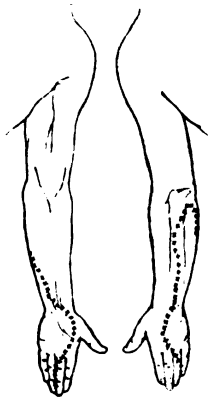
FIG. 7.



Analgesia (no anæsthesia) in Case 4.

CASE 5.—Private —— whilst in the Dardanelles noticed that his left hand began to lose its power after about half an hour's trench digging or rapid fire. The weakness rapidly increased, and he also observed wasting of the hand. In addition he suffered from a shooting pain down the ulnar border of the forearm and hand which was induced by carrying anything or wearing his heavy overcoat, or sometimes even by his braces. On examination there was paresis with atrophy of all the small muscles of the hand, and also slight weakness of the flexors of the fingers, especially on the ulnar side. The affected hand was dry, cold, and slightly cyanosed. The only objective sensory symptom was analgesia over part of the distribution of the inner cord of the brachial plexus. (Fig. 8.) Epicritic sensibility, even to the compass test, was unaffected throughout. An X ray examination showed a cervical rib on the right side, but none on the affected side. At the operation, performed by Captain Telford, a very large contribution from the first dorsal root was found ascending in a deep groove on the inner border of the first rib to join the last cervical nerve. There was no compression of the subclavian artery. The portion of rib obviously compressing the first dorsal root was excised. On the following day (24 hours after the operation) the hand was warm and moist, and the analgesia had completely disappeared. The capillary circulation was still a little sluggish, but there was no cyanosis, and the man volunteered the information that "during the night he had felt the blood pumping through his left hand for the first time as long as he could remember." (A full report of this interesting case will be published subsequently in a separate paper.)

FIG. 8.



Analgesia (no anæsthesia) in Case 5.

All these cases exhibit a dissociated type of sensory disturbance; in each the area in which there is a loss of sensibility to pain (tested by pinprick) is greater than that in which the loss to light touch (tested by camel hair brush) occurs, a syndrome which is the reverse of that enunciated by Head, Rivers, and Sherren[2] for injuries of peripheral nerves. I have discovered this type of

[2] H. Head, W. H. R. Rivers, and J. Sherren: Brain, vol. xxviii., 1905.

dissociation in 15 additional cases, but have failed to find it in the examination of recent injuries. In every case where it was found it developed after the wound had healed. In this connexion it is interesting to note that my attention was first directed to this dissociation by Captain D. E. Core, who was at the time examining old cases, whereas I was seeing only the recent ones, and it was only later when I began to see it develop that I realised its significance. All the examples of this dissociation which have come to operation show one pathological condition in common—namely, compression of a nerve which is undivided or incompletely divided.

In the first three cases described the compression was observed on exposure of the nerve. In the first the dissociation was reversed by complete division, in the second by neurolysis, whilst in the third unfortunately I was unable to make an examination after the operation. In the fourth case the position and character of the injury and the very late onset of the nervous symptoms indicate compression by the contraction of the scar. The manifestations were not so profound as in the former cases, and recovery occurred without neurolysis. The fifth case—compression of the first dorsal contribution, to a probably post-fixed brachial plexus, by a normal first rib—proves still more clearly the effect of pressure and the rapid relief to be obtained in early cases by its removal.

These observations seem to show that the first signs of compression are manifested by loss of conduction in the motor fibres and severe pain, which are succeeded by analgesia and diminution (later disappearance) of the subjective pain, and later tactile anæsthesia, which is never so widespread as the analgesia. Any reference to thermal anæsthesia is here omitted as it is not so conveniently tested clinically as "pain" and "light touch," which appear to give the necessary practical information. The simple examination required enhances the clinical value of this sign. This form of dissociation can be rapidly tested, and the only conditions with which it can possibly be confused are complete division of posterior roots and perhaps syringomyelia; but these errors may easily be avoided.

It is unnecessary to account for the frequency of the signs of compression in military cases after Bowlby's[3] recent description of the way in which all bullet or shell fragments, moving at immense speed, not only shatter the structures in the line of their flight, but by their divulsive force shatter and lacerate the surrounding tissues for remarkable distances in all directions. This form of dissociation is not only of importance in diagnosing compression, but also useful in proving the relief of compression after neurolysis.

It is not intended here to refer to the theoretical significance of this phenomenon, but it is of interest to mention the hypothesis, supported by Ranson's[4] recent work, that the afferent fibres conducting protopathic sensibility are non-medullated.

[3] Bowlby: Bradshaw lecture, Wounds in War, THE LANCET, Dec. 25th, 1915.
[4] S. W. Ranson: Unmyelinated Nerve Fibres as Conductors of Protopathic Sensation, Brain, vol. xxxviii., 1916.

Dr. F. T. Underhill, medical health officer of Vancouver, in presenting his annual report for 1915, lays chief stress on the need for thorough inspection of all foods and their distribution, and the inspection of dairy-farms, milk- and other food-shops, and food-hawkers. He notes that after two or three years' steady work bakehouses are all free from vermin, and wrapped bread can be had from all bakers.

INVESTIGATIONS OF STRAINS OF TUBERCLE BACILLI DERIVED FROM SPUTUM.

BY A. STANLEY GRIFFITH, M.D. VICT.
(*For the Medical Research Committee.*)

IN May, 1914, I communicated to the *British Medical Journal*[1] the results to that date of investigations of strains of tubercle bacilli derived from the sputum of phthisical persons. Since then I have isolated and investigated a further series of cultures from sputum. These additional strains of tubercle bacilli were obtained in the course of experiments made in test of a simple method, mentioned in my last paper, of raising cultures directly from sputum by means of antiformin. I have also completed the investigation of four atypical sputum strains which were omitted from the report on the last series because their biological characters had not then been satisfactorily established. As my work on these lines is for the time being at an end (September, 1915), I propose in this paper to summarise the whole of my observations upon the types of tubercle bacilli in the sputum of consumptives. The total number of strains of tubercle bacilli isolated by me from sputum is 212. Of these, 29 were investigated for the Royal Commission on Tuberculosis,[2] 152 for the Grocers' Company, and the remainder (31) on behalf of the Medical Research Committee.

The subject-matters of this report will be dealt with in order as follows: (*a*) Outcome of my observations on the sputa of 31 additional cases of phthisis pulmonalis. (*b*) The biological characteristics of four atypical sputum strains from Series 2. (*c*) Analysis of the results obtained in examination of sputum from 212 cases of phthisis pulmonalis. (*d*) My further experience of antiformin as a means of eliminating from sputum and from tuberculous tissues all micro-organisms other than B. tuberculosis.

(*a*) *31 Additional Strains.*

Thirty-one new strains of tubercle bacilli have been raised from sputum. The patients from whom the sputum samples were derived varied in age from 17 to 53 years; 15 were under 25 and 3 were over 40. Of the patients 12 were females and 19 were males. I am indebted to Dr. W. M. Elliott, Ruchill Hospital, Glasgow, and Dr. J. W. Allan, Bellefield Sanatorium, Lanark, for specimens of sputum from 28 persons, and to Mr. P. C. Varrier-Jones, Cambridge, for the specimens from the other three.

A small quantity of each sputum sample was inoculated intraperitoneally into one guinea-pig. Of the 31 guinea-pigs so inoculated two died prematurely; the rest developed typical general tuberculosis. Direct cultures were sown from each sputum after treatment with antiformin, and in this way cultures of tubercle bacilli were isolated from 26 of the samples. From the remaining 5 samples, as well as from 8 which had yielded cultures direct, cultures were derived through the guinea-pig. The cultures have been tested as to their cultural characteristics only. Each of the strains has produced on bovine serum good growths with yellow pigment, and on glycerine agar, potato or broth the luxuriant creamy wrinkled layers which are characteristic of the human type of tubercle bacillus.

In order to ascertain whether or not a strain is capable of producing pigment on serum it is essential to use bovine serum which is of yellow colour when coagulated. The serum I have used for subcultures has, during the greater part of my work at Cambridge, been obtained from a single animal, a Shorthorn cow, which is kept at the farm for the sole purpose of supplying serum. Different batches of serum from this cow have varied in colour, when coagulated, from pale yellow to golden yellow, but all have favoured the production of pigment. On a golden yellow serum the human type of tubercle bacillus produces a rich yellow, often orange-yellow, pigment. With a less yellow serum the colour of the pigment varies from light cream to yellow. On a colourless serum, such as is usually obtained from the calf, pig, goat, or horse, the growths of human tubercle bacilli are greyish or greyish-white and are not pigmented. Standard bovine cultures have never in my experience produced bright yellow pigment, even on a golden yellow serum. Yellow pigment in a serum culture is therefore a character of considerable differential value.

(*b*) *Four Atypical Strains.*

With the exception of the majority of strains derived from lupus and of a few mixed strains, all the strains of tubercle bacilli of human origin upon which I have previously reported have been readily classified as either of bovine or of human type. This classification has been based upon the characters of growth on artificial media and the virulence for certain species of animals, the rabbit being the standard test animal. The deviation from type observed in the majority of lupus tubercle bacilli has been in respect to virulence, the cultural characters of these strains having been those of either the human type or the bovine type of tubercle bacillus.

During my work on tuberculosis in Cambridge I have obtained now and again from various kinds of human tuberculosis strains of tubercle bacilli which have displayed another kind of anomaly. These strains have exhibited standard (mammalian) virulence, but have not corresponded to either of the two mammalian types of tubercle bacilli in respect to their cultural characters. Of this new variety of tubercle bacillus I have obtained four strains from sputum. The following is an account of the biological properties of each such strain, together with an abstract of clinical notes of the case in each instance. For the latter I am indebted to Sir Robert Philip and Dr. J. J. Perkins.

CASE 1.—A woman, aged 24, was admitted to Brompton Hospital in 1911. The upper and lower lobes of both lungs were affected. The duration of the lung trouble was stated to be about three years.

Bacteriological Investigation.—Sputum obtained in May, 1912, was muco-purulent and contained fairly numerous T.B.; majority of medium length, a few long and beaded. A culture was isolated direct. Subcultures on serum were luxuriant, and on a yellow bovine serum exhibited a rich yellow pigment. On glycerine serum growth was luxuriant, pigmented, more heaped up than on serum, parts being wrinkled and warty. On glycerine agar at the end of a month growth was partly grey and translucent and partly creamy-white and wrinkled. After three or four months' incubation the major part of the layer was creamy, wrinkled, and of moderate thickness, the rest being grey and like ground glass. Similar growths were obtained on several agar tubes, and they differed from those ordinarily produced by standard human tubercle bacilli in being less abundant, not so uniform, and slower in attaining the maximum. On glycerine potato the most usual result in upwards of 24 tests was the production of a thin grey layer in which secondary colonies appeared after from two to three months. On further incubation these colonies increased slowly in size, becoming very irregular and bizarre in shape, resembling those often produced by bovine tubercle bacilli on this medium. Occasionally the growths were greyish-yellow and granular, but not much raised. On one occasion a moist, whitish, finely wrinkled but not thick layer was produced. On glycerine broth the best growth obtained after many attempts was a moist, greyish-white, mottled, not thick pellicle covering two-thirds of the surface, the rest being covered by extremely delicate transparent film.

A rabbit inoculated subcutaneously with 35 mg. of culture was killed 124 days after inoculation. The necropsy showed a small local lesion, partial caseation of one scapular gland, and scattered miliary tubercles in the lungs. Two guinea-pigs inoculated subcutaneously (one partly intraperitoneally), each with 0·1 mg., died of typical tuberculosis in 47 and 149 days respectively.

CASE 2.—Sputum from a woman aged 23 was received in January, 1912. She was suffering from pulmonary tuberculosis and had a blood-stained muco-purulent expectoration containing numerous beaded T.B.

Bacteriological Investigation.—A culture was obtained direct from the sputum. Subcultures on serum and glycerine serum were identical with those of Case 1 strain. On glycerine agar growth was difficult to obtain, the majority of the tubes sown showing no visible growth after several months' incubation. On other agar tubes there was in the second month a definite but extremely thin filmy grey layer, around the margins of which, under low magnification, very minute discrete colonies could be seen. After further incubation, up to four months, secondary colonies were seen in the thin grey layer, but these were only just visible to the naked eye and were grey and filmy or greyish-white. After incubation up to six months the appearances were the same as after three and four months. On glycerine potato in the great majority of cases only a thin grey layer was produced after several months' incubation. In one tube numerous secondary colonies developed in the thin grey layer, but these remained minute. In another tube, after nine months' incubation, there was a thin, moist, greyish-white layer containing half-a-dozen creamy warty colonies up to a millet seed in size. On glycerine broth only a few filmy grey islands of growth have been obtained.

A rabbit inoculated subcutaneously with 45 mg. of culture and killed 124 days later showed a local lesion and moderately severe tuberculosis of the lungs only. Another rabbit inoculated subcutaneously with 10 mg. of culture and killed 97 days later also showed a local lesion and moderate tuberculosis of the lungs only. A culture from the lung of the latter rabbit resembled the original. Three guinea-pigs were inoculated, each with 0·1 mg. One, intraperitoneally inoculated, died in 27 days of typical subacute general tuberculosis. Of the two subcutaneously inoculated guinea-pigs one died in 61 days of general tuberculosis; the other died in 114 days of chronic general tuberculosis of fibroid type. Cultures from two of the guinea-pigs were identical in cultural character with the original.

CASE 3.—A woman, aged 31, was admitted to the Royal Victoria Hospital, Edinburgh, on March 20th, 1913, on account of cough, loss of appetite, and weakness. The duration of illness was stated to be six weeks. Personal and family history unimportant. On examination she showed bilateral pulmonary tuberculosis, more extensively involving right side, where there was evidence of vomication. There was marked constitutional disturbance. The patient died some time later in a home for incurables.

Bacteriological Investigation.—Thick muco-purulent sputum was received in November, 1913. It contained very numerous tubercle bacilli; many were long, curved, and beaded. A guinea-pig inoculated intraperitoneally with the sputum died in 32 days of typical general tuberculosis. A rabbit inoculated subcutaneously and killed 92 days later showed no more than a small local lesion and a caseous focus in one adjacent gland. Cultures were isolated directly from the sputum. Subcultures on serum and glycerine serum were luxuriant and pigmented like those of the strain from Case 1. On other media containing glycerine growths were very sparse and closely resembled those produced by the strain from Case 2. A rabbit inoculated subcutaneously with 15 mg. of the culture and killed 101 days after inoculation showed a small softened caseous lesion and three tubercles in the lungs only. A culture recovered from one of these tubercles resembled the orginal culture in cultural characteristics and in virulence for the rabbit.

CASE 4.—A woman, aged 38, was admitted to the Royal Victoria Hospital, Edinburgh, in August, 1913, on account of cough, breathlessness, &c. The duration of her illness was stated to be 14 months. Examination revealed extensive involvement of left lung and slighter involvement of right apex. Systemic disturbance marked. Sputum showed moderate numbers of T.B. during first five months' treatment; thereafter the examination was negative. The patient improved considerably under treatment, and on discharge there was diminution in the area involved and T.B. were no longer detected in the sputum.

Bacteriological Investigation.—A sample of the sputum received in November, 1913, was thick, viscid, and contained a moderate number of T.B., mainly long, curved, and beaded. A rabbit inoculated subcutaneously with a small amount of the sputum and killed 95 days later showed a local lesion, a dozen tubercles in the lungs, and one tubercle in a kidney. Cultures were isolated directly from the sputum. The cultural characteristics of the strain were practically identical with those of the strains from Cases 2 and 3. A rabbit inoculated subcutaneously with 24 mg. of the culture and killed 101 days later showed

a cystic caseous lesion, partial caseation of the nearest glands, scattered miliary tubercles in the lungs, and one tubercle in a kidney. A culture derived from the lung lesions of the rabbit was identical with the culture inoculated in cultural characteristics and in virulence for the rabbit. Two guinea-pigs inoculated subcutaneously each with 1 mg. of culture died of typical general tuberculosis in 75 days.

On the clinical side the cases have not presented any unusual feature. With regard to the biological properties of the strains isolated, it must first be noted how in most particulars the strains resemble the human type of tubercle bacillus. All the strains have produced in the rabbit and the guinea-pig the pathogenic effects of standard human tubercle bacilli. They resemble human tubercle bacilli also in their mode of growth on serum and glycerine serum. Microscopically the strains exhibited very irregular morphology, and there were many long, curved, and beaded forms both in the sputum and in cultures. They differ from standard human tubercle bacilli only in the way they grow upon glycerine agar, potato, and broth. On these media they are dysgonic, and save for very minor differences on glycerine agar have displayed characters which would entitle them to classification with bovine tubercle bacilli. The cultural features of three of the strains were practically identical. The other strain produced moderately good growth on agar, not equal to that of standard human tubercle bacilli, but growths definitely dysgonic on potato and broth.

The growths on serum and glycerine serum of all the strains so closely resembled those of standard human tubercle bacilli that at first I was of the opinion that my failure to get similar characteristic growths on other media was due to faulty technique —i.e., to the use in the tests of not sufficiently vigorous subcultures or to unfavourable media. The tests were therefore repeated again and again, but always with the same results. Two of the strains have been under observation for more than three years, and have been subcultivated on serum upwards of 60 times. Even after this prolonged subcultivation there has been manifested no increased capacity to grow on glycerine agar, potato, or broth. The same stability of cultural characters has been presented by each of the other strains after a period of observation of two and a half years. The distinctive cultural features of each strain have been retained also after subcultivation for several generations on glycerine serum and (of three strains) after passage through the bodies of animals (rabbits and guinea-pigs). These strains appear therefore to be stable new varieties of the tubercle bacillus, and on account of their closer resemblance to the human than to the bovine type of organism I have provisionally classified them as atypical human tubercle bacilli.*

The detection of these varieties of tubercle bacilli emphasises the importance of complete study of cultural characteristics of tubercle bacilli. In order to ensure that examples of this class of strain are not overlooked, it is essential to use for testing purposes not only a variety of glycerine media but also a serum which favours the production of pigment. The errors of classification which might have been made in these cases by a too restricted variety of culture tests are the following. If the serum used had been colourless or of poor quality distinctive (pigmented) growths would not have been secured, and the strains would have been classified as dysgonic with the pathogenicity of standard human tubercle bacilli. On the other hand, if the culture tests had been limited to egg and serum, with and without glycerine, the strains would not have been recognised as anomalous and would have been classified with standard human tubercle bacilli.

(c) *Analysis of Results obtained from Investigation of Sputum of 212 Phthisis Patients.*

The following table records the bacteriological results obtained in the examination of sputum from 212 cases of phthisis pulmonalis:—

	Number of cases.	Type of tubercle bacillus isolated.		
		Standard human.	Atypical human.	Standard bovine.
England... ...	139	135	2	2
Scotland... ...	73	70	2	1
Total... ...	212	205	4	3

It is notable that of my series of 212 sputum examinations 3 only (1·4 per cent.) yielded tubercle bacilli of bovine type. Also that in each of these 3 cases, though the sputum was repeatedly tested, none but bacilli of the bovine type were on any occasion isolated.† No other investigator in this country has cultivated from tuberculous sputum any but tubercle bacilli of human type, this result being recorded by Bulloch[3] and Cobbett[4] in regard to 23 and 2 cases respectively, and by Cruickshank[5] in reference to an unspecified number of observations. This great preponderance in pulmonary tuberculosis of the human to the exclusion almost of the bovine tubercle bacillus is in striking contrast to the relative frequency with which bovine tubercle bacilli occur in surgical tuberculosis and in the tuberculosis of childhood.

In this country, therefore, pulmonary tuberculosis which has arrived at the ulcerative stage is but very rarely referable to tubercle bacilli of bovine type. And elsewhere than in Britain an even smaller proportion of the sputa of persons suffering from pulmonary tuberculosis has yielded bacilli of bovine type. Out of 736 cases tested by foreign investigators 3 only yielded bovine tubercle bacilli; and further, in 2 of these 3 the bovine bacillus was only sparsely mixed with preponderating bacilli of human type, while in the third case proof was not afforded (only a single examination of the sputum having been made) that in this instance also both types of tubercle bacillus were not coexistent in the lungs of the patient.

(d) *Method of Obtaining Cultures of the Tubercle Bacillus by means of Antiformin.*

The simple method which I described in my last paper of obtaining cultures direct from sputum by means of antiformin has proved on more extended trial to be very trustworthy. This method was the outcome of the observation that the presence of free antiformin in a tuberculous fluid used for sowing cultures was not detrimental to the growth of the tubercle bacillus. There is no need, therefore, to centrifuge the bacilli and wash them free from antiformin before sowing. In fact, it is unadvisable in cultivation experiments to allow an antiformin sputum mixture to become so fluid that it is possible to centrifuge the bacilli. The method is carried out as follows:—

Equal volumes of dilute antiformin‡ and sputum are pipetted with a wide-bore pipette into a small test-tube and

* Since this paper was written Eastwood and F. Griffith have reported in the Journal of Hygiene (Vol. XV., No. 2, Jan. 14th, 1916) the isolation of similar atypical strains from cases of bone and joint tuberculosis. These strains will be more particularly referred to in my shortly forthcoming report on bone and joint tuberculosis, from which variety of tuberculosis I, too, have isolated several atypical strains.

† For details of these three cases see references 1 and 2.

‡ Antiformin, D.R.P., a mixture of sodium hydrate and Eau de Javelle.

thoroughly mixed. At intervals subsequently one loopful of the mixture is spread evenly over the surface of egg medium and the tubes are then incubated. By means of this simple procedure I obtained pure cultures of tubercle bacilli from 26 of the 31 new samples of sputum. In each experiment the volume of the sputum taken was about 1 c.c. and this was mixed with an equal volume of a 10 per cent. dilution of antiformin, thus forming a 5 per cent. antiformin sputum mixture. Egg tubes were sown with this mixture at intervals of 5 (sometimes 10) minutes during the first 30 minutes, the first tube being sown 5 minutes, occasionally 10 minutes, after the mixture was made. Tubes were also sown in many instances after longer intervals, up to 24 hours.

In 5 out of the 31 experiments the method failed. Twice all the culture tubes sown became overgrown in 24 hours, the antiformin not having been in sufficient amount to kill the microbes present in the particular sputum. In 3 experiments all the tubes sown remained sterile; tubercle bacilli were numerous in one of these sputum samples, scanty in the other two. In these three cases the concentration of antiformin was too high and tubercle bacilli as well as other organisms were destroyed.

In all the 26 positive experiments the mixtures were free from living organisms other than tubercle bacilli in 20 minutes or less. In 12 experiments pure cultures of tubercle bacilli were obtained after the antiformin had acted for about 10 minutes, and in 7 experiments after exposure for only 5 minutes. These experiments show how speedily organisms other than tubercle bacilli succumb to the action of antiformin. On the other hand, tubercle bacilli themselves did not long resist the action of 5 per cent. antiformin. In 13 experiments mixtures which yielded pure cultures of tubercle bacilli after 10 minutes' exposure to 5 per cent. antiformin were sterile after further periods of 5 or 10 minutes. The sputa in these cases were thin and mucinous, and in such sputa the resisting power of the tubercle bacillus is apparently little greater than that of the other microbes present. This was well shown in one experiment. An egg tube sown 5 minutes after the sputum and antiformin were mixed yielded an abundant growth of ordinary organisms after 24 hours' incubation. A tube sown 10 minutes after mixture grew a pure culture of tubercle bacilli. Tubes sown 15 and 20 minutes after mixture remained sterile. In several other experiments tubercle bacilli have appeared to survive other organisms not longer than 5 minutes.

It is evident from these results that with thin sputa the margin of time available during which pure cultures of tubercle bacilli are possible from a mixture may be very brief. When the sputum was thick the tubercle bacilli escaped early destruction, and such mixtures were found capable of producing cultures 24 hours after the sputum and antiformin were mixed. While 5 per cent. antiformin has given good results, so low a percentage has certain disadvantages for routine use. When the sputum is at all tenacious some time may elapse before organisms other than tubercle bacilli are destroyed and many may escape destruction altogether. Owing to this uncertainty it is necessary to sow cultures after many different intervals, thus greatly prolonging the period of the experiment. With a view of ascertaining whether higher percentages of the inhibiting agent would be more advantageous many comparative experiments with different proportions of antiformin have been made. In these experiments emulsions of tuberculous organs of guinea-pigs and rabbits have been employed as well as sputum.

The results of these additional observations, the details of which will be published at a later date, have led me to the conclusion that it is more advantageous, especially when dealing with tenacious sputum, to use high percentages of antiformin with short exposure than low percentages with long exposure. An opinion in this sense has also been expressed by McFadyean and Knowles.[6] For routine use 15 per cent. antiformin in the sputum mixtures is to be recommended, because there is not so much necessity for haste in sowing cultures as with still higher percentages. The first sowing should be made one to two minutes after mixture according to the consistency of the sputum, and three tubes at least ought to be sown within the first five minutes. Thereafter the intervals may be longer—five minutes—especially if the sputum remain undissolved and mucinous. There is no need to sow tubes after 20 minutes or after the sputum has completely dissolved.

The work here reported on has been carried out in the Pathological Department of the Field Laboratories, University of Cambridge, on behalf of the Medical Research Committee.

References.—1. Brit. Med. Jour., May 30th, 1914. 2. Final Report of the Royal Commission on Tuberculosis, Part II., Appendix, vol. i., pp. 8-10 and 149-152. 3. Horace Dobell Lecture, Royal College of Physicians of London, 1911. 4. Second Interim Report of the Royal Commission on Tuberculosis, Part II., Appendix, vol. ii. 5. Brit. Med. Jour., Nov. 9th, 1912. 6. Journal of Comparative Pathology, vol. xxviii., Part 2.

PAIN IN RENAL AND VESICAL LESIONS:

ITS CHARACTERISTICS, ITS ANOMALIES, AND ITS MISGUIDING MANIFESTATIONS, WITH 12 ILLUSTRATIVE CASES.

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(*Continued from p. 674.*)

Causes of Pain in the Bladder.

LOCAL pain may be caused by any diseased condition of the bladder, giving rise to irritation of the terminal filaments of the sensory nerves supplying the mucous membrane, but as a rule little suffering is complained of unless the trigone or the neck of the bladder is involved in the lesion. When the pain is constant it is generally of a dull aching character and is located behind the symphysis pubes. Such pain is seen in encysted calculus at the base of the bladder and in chronic prostatitis. It is not relieved by emptying the bladder as it is in acute prostatitis, in tuberculosis, and in chronic cystitis. It is remarkable how free from pain some diseases are, such as papilloma, cystitis due to bacillus coli infection, and tuberculous disease involving the anterior wall. While, on the other hand, suffering, which may appear to be altogether out of proportion to the extent of the lesion, may be met with when it is located at the neck or in the first part of the urethra. Then the pain is sharp and agonising, especially during and after micturition. When the mucous membrane is intact the pain is not generally very great, but if it becomes eroded or ulcerated the suffering is more or less constant, is greatly increased when the bladder is evacuated, and the suffering continues after the termination of the act. With the exception of cases of stone the pain is worst at nights.

Referred pains in bladder affections extend more to the parts behind and below than to those above—that is to say, to the third and fourth sacral segments, and less frequently to the first, second, and third lumbar. So it is found that most patients complain of pain behind the sacrum, almost in the middle line, over the hips, and in the perineum, whereas a few may find that it extends to the back part and outer side of the hips or to the feet. (Fig. 6.) Occasionally pain passes to one or both kidneys, but how far this is due to nerve reflex or to backward fluid pressure it is often difficult to say. The conditions which cause pain are: (*a*) cystitis, especially when the lesion involves the neck of the bladder or the trigone, and when ulceration has been induced; (*b*) pericystitis; (*c*) retention of urine; (*d*) tuberculosis; (*e*) tumours; (*f*) rupture of the bladder; and (*g*) cystalgia.

Differential Diagnosis of the Renal Lesion Causing Pain.

Under normal circumstances moderate pressure upon the kidneys through the abdominal parietes does not produce pain or even discomfort; it may, indeed, be laid down as a principle that when such pressure induces pain there is some alteration in the kidneys. Undue tenderness shows itself in increased muscular resistance to pressure with the hands. In order to determine increased sensitiveness in the kidney, the patient lying upon his back with the knees well elevated by pillows, the surgeon should pass one hand behind the lumbar region, and with the other hand exert gentle but firm pressure in the direction of the kidney. When the muscular resistance is overcome and the pressure continued a peculiar, deep, dull, sickening feeling is experienced by the patient, which as a rule he can easily distinguish from the superficial aching consequent upon the compression of muscle.

Another method of determining the sensitiveness of the kidney is to give a sharp knock or tap in the lumbar region. In some diseases, most notably in renal calculus, a sharp, stinging pain is thereby produced. The one side should be carefully compared with the other. When present, increased sensitiveness is a useful guide, but its absence has no significance, as in many serious renal lesions pressure does not produce suffering.

Spontaneous pain in the lumbar region or in other well-recognised areas is the very common complaint in kidney disease, but its character and situation vary according to circumstances, and may often guide the surgeon in forming an opinion as to the nature of the lesion giving rise to the suffering. The feeling may only amount to a sense of uneasiness or discomfort; it may be a dull or gnawing pain; it may be very acute at times or may reach to a degree to be described as lacerating torture, accompanied by agonising spasms. The suffering may be of short duration, with intervals of complete freedom from pain, or it may be persistent. The less severe pains as a rule continue steadily in their course and are located in one place, while the more acute pains are generally remittent and extend over considerable areas. Dull persistent pain in most cases indicates a slow, steady change in the condition and bulk of the renal parenchyma or in the size of the pelvis, as is seen in tuberculous nephritis and in tumours. On the other hand, acute suffering is due to lesions which suddenly interfere with the exit of urine from the pelvis; for example, in calculus, in tuberculous pyelitis or ureteritis, or in obstruction from the impaction of a blood clot. Very often the patient is able to distinguish more than one kind of pain—a dull, gnawing, local pain which is persistent, and a sharp, spasmodic, remittent pain.

The diseases of the kidney in which pain is a prominent symptom embrace all lesions which involve acute inflammation of the renal parenchyma or the pelvis, and those in which there is a condition causing sudden interference with the circulation of blood or an impediment to the escape of urine.

We may now consider how far pain in the region of the kidney may assist us in forming a diagnosis. It is not possible to classify surgical affections of the kidney according to the presence or absence of pain, for the greatest variation in this respect may be observed in the same disease in different individuals, or, again, a lesion which at one stage gives rise to little or no suffering may at a later period cause considerable pain. It may be generally stated, however, that in diseases where the increase in bulk of the organ is slow, or the distension of the pelvis is very gradual, the lesion is not characterised by much suffering—for example, in simple chronic hydronephrosis, in polycystic kidney, and in tuberculous nephritis without pyelitis. In calculus impacted in the substance of the kidney little pain may be referred to the organ, whereas such diseases as pyonephrosis, suppurative nephritis, perinephritic abscess, tuberculous pyelitis, and calculus in the pelvis or in the ureter, usually give rise to considerable pain.

Paroxysmal pain coming on for longer or shorter periods, with intervals of complete relief, is generally caused by some obstructive lesion, calculous obstruction, torsion of the ureters, obstruction by pus, tuberculous débris, hydatid cysts, or blood clot, or from spasm of the ureters. It may also be caused by the poisons of rheumatism or of gout, or by some of the malarial poisons.

On the other hand, persistent pain of renal origin is most likely to result from some inflammatory affection of the pelvis and ureter, the presence of an impacted stone, the existence of rapidly advancing malignant disease or of a tuberculous lesion, with ulceration of the pelvis. Sometimes, also, persistent pain may be induced by the irritation of highly acid urine.

The conditions causing pain are: (*a*) Movable kidney—(1) traction on the pedicle, (2) passive hyperæmia, (3) transitory hydronephrosis, and (4) reflex disturbance; (*b*) congestion; (*c*) inflammation, acute and chronic; (*d*) hydronephrosis; (*e*) pyelitis and pyonephrosis; (*f*) cystic degeneration; (*g*) perinephric abscess; (*h*) tuberculosis; (*i*) renal calculus; (*j*) malignant tumours; (*k*) renal infarction; (*l*) nephralgia; (*m*) aneurysm of renal artery and (*n*) rupture of the kidney.

(*a*) *Movable kidney.*—In this disease pain is very variable in degree, so that for sake of discussion the cases may be divided into two classes: (1) Those in which ill-defined pain, generally abdominal, but not specially referable to the renal region, is the most marked symptom; and (2) those in which the pain is distinctly renal and is associated with (*a*) albuminuria only, (*b*) albuminuria and tube casts, (*c*) hæmaturia, (*d*) transitory hydronephrosis, and (*e*) pyonephrosis.

In the *first class* the pain is seldom or never severe. The point from which it seems to radiate is halfway between the lower end of the sternum and the umbilicus, but there is no tenderness on pressure at the epigastrium, so often observed in the pains of gastric disorders. In this group the pain does not in any way resemble renal colic, not being due to obstruction to the escape of urine, but rather to be attributed to traction on the nerves supplying the kidney or to pressure upon those lying close to it.

The pain is generally dull, and may amount rather to what the patient describes as an "unendurable sense of weakness" in the abdomen and a "tired feeling in the back." The pain often extends down the thighs, and is not infrequently mistaken for "sciatica" or "lumbago," or may be attributed to "rheumatism of the muscles" or "disease of the hip-joint." The pain, however, is not limited to the sciatic nerve, but extends occasionally in the course of the anterior crural. It is unattended with pain on pressure of the nerve trunks and is accompanied by frequent desire to micturate. The pain is not influenced by exposure

to damp or cold, nor is it increased by pressure over the painful part. There is no loss of motor power, nor is there atrophy of muscles. It is increased by exercise and relieved by rest, especially in bed. It is not prone to exacerbations during the night, nor is it increased by standing or pressure over the hip-joint. From time to time there may be digestive disturbance, especially if the patient has been taking much exercise of a rough kind. While the pain varies from day to day, there are intervals of rest and complete comfort. During the time that the pain is most severe there may be a feeling of nausea, the pulse is not affected, the temperature is unaltered, while after the attack passes away there may be a sense of utter prostration.

Medicinal treatment may relieve any digestive disorders when carried out along with rest in bed, and the pain may pass away, but as soon as the patient begins to move about again the old troubles all return. This occurs time after time. The patient loses courage, and thinking that no one "understands her complaint" she becomes resigned to her fate, and goes on suffering until the renal condition is revealed and an operation performed.

The *second class* forms one of the most interesting groups in that the pathology is clearly defined, and the most satisfactory results are attained by treatment. A circumstance I have observed, and one that is worthy of note, is that in these cases there are no signs of a neurotic tendency. In all, the symptoms are simply those due to mechanical obstruction to the circulation or to the escape of urine from the kidney. The first three symptoms—namely, albuminuria, the presence of tube casts, and the appearance of blood—are clearly due to the obstruction of the circulation; whereas the two latter, hydronephrosis and pyonephrosis, are due to the obstruction to the urinary flow. When we consider the changes that take place when the kidney becomes movable, the effects produced by twisting of the vessels, the nerves, and the ureter, it is easily understood how pain is produced. Impediment to the flow of the arterial blood to the kidney is very rare.

In all cases that belong to this group the pain is referred to the region of the kidney as the site of its origin or of its greatest intensity, but in severe cases the pain radiates far beyond the lumbar region. When the displacement is such as to obstruct the venous return only, the suffering comes on gradually and is of a steady, dull aching character. When it is so complete as to cause hæmaturia the renal pain may begin very suddenly, simulating renal calculus, and may be accompanied by severe gastric disturbance, nausea, and vomiting. Occlusion of the ureter causes more severe pain than obstruction to the venous return, is associated with more or less swelling from distension of the pelvis, and is accompanied by retention of urine. When the obstruction to the venous return is slight and of short duration, the only changes observed are a diminution in the quantity of the excretion and the presence of albumin; but if the obstruction be serious and prolonged, tube casts may be found in the deposit, and the organ is increased in size.

Torsion of the renal vessels and of the ureter may lead to one or more of the following symptoms: 1. Albuminuria with or without tube casts. 2. Hæmaturia, sometimes coincident with blood casts in the urine. 3. Dull, aching pain in the renal region almost constantly present, and associated with occasional paroxysms of colic similar to that produced by calculus. But while the paroxysmal pain, the hæmaturia, and the general gastric disturbance are similar in character and in mode of onset to what is observed in calculous disease of the kidney, in addition to, and frequently coincident with, the symptoms just mentioned, there is sudden diminution in the quantity of the urine. The subsidence of the renal pain is soon, but not immediately, followed by copious flow of urine of high specific gravity, instead of low as in transitory hydronephrosis. The hæmaturia associated with blood casts in the urine, and the renal pain concurrent with sudden appearance of albuminuria and tube casts, are important circumstances in forming a diagnosis.

Impediment to the escape of blood along the veins produces increased vascular tension, indicated by pain, in most cases by slight, but in a few by considerable, increase in the size of the kidney, and in many cases by reduction in the quantity of the excretion.

When frequently repeated over a long period venous obstruction is certain to lead to atrophy of the organ, but fortunately the sickness and pain induced by the condition force the patient to take rest in bed; thereby often the normal position of the kidney is restored and the twisting of the pedicle rectified.

Displacement of the kidney may lead to impediment to the flow through the ureter in various ways: (1) By kinking from rotation of the kidney on its short axis; (2) by obstruction from bending of the ureter in some part of its course; and (3) by occlusion of the lumen of the duct through angular insertion of the ureter into the bladder. I have seen only 19 cases where the hydronephrosis was sufficiently large to be detected by the hand as a distinct swelling in the lumbar region. But judging from the symptoms observed in many other cases, I have little doubt that occasional and slight obstruction of the ureter occurs frequently, lasting, however, only for a short time—too short a time to allow much fluid to accumulate. The duration of undoubted cases of transitory hydronephrosis varies considerably. In 12 of the 19 cases just alluded to, the duration was not less than six hours. In some the attacks extended over 48 hours, and in a very few lasted for days.

As I have already demonstrated in published cases[1] while the pelvis of one kidney is becoming distended the function of the opposite organ may be suddenly inhibited, as shown by complete suppression. Examples of reflex inhibition of the functions of the kidney are numerous. For example, unilateral obstruction due to the presence of a calculus in one ureter may cause complete anuria, which may last for a considerable time. In some the inhibition of the function of the healthy kidney occurs at once; in others it is only when the hydronephrosis on one side reaches a certain point that the kidney on the opposite side fails to act.

As a rule, transitory hydronephrosis of one kidney is not associated with immediate suppression of the function of the opposite organ. The suppression usually only follows after a considerable interval of hours or even of days. The suppression may be followed by albuminuria, and this may be limited to the urine which is excreted by the kidney opposite to the one which is hydronephrosed. Again, in cases of transitory hydronephrosis the

[1] Renal Cases, 1899, p. 39, published by James Maclehose and Sons, Glasgow.

excretion of the opposite kidney may not be stopped but only altered in character, the most marked changes being increase in the specific gravity and the presence of albumin.

Reflex functional disturbance is seen in some of the more severe cases. Not only are the gastro-intestinal symptoms pronounced and the functions of the kidney markedly interfered with, but in some there may be symptoms indicative of more remote reflex functional disturbance, as exemplified by derangement of the circulation or respiration, or of alterations in sensation. In one case I have observed complete anæsthesia of the mucous membrane of the bladder, and the patient was unable to micturate spontaneously for several weeks. These remote reflex symptoms are regarded and designated by some observers as "purely hysterical," a term the exact import of which has not, as far as I am aware, been defined. It is one commonly used to imply an attempt to counterfeit disease on the part of the patient. Does it not really, in most instances, serve as a convenient cloak for the ignorance of its creator when he is confronted with numerous and perplexing symptoms of the intimate pathology of which he has little knowledge?

These remote reflex symptoms of movable kidney may be seen in patients who have very perfect mental control, and in whose case the suggestion of either partial or complete suspension of inhibitory mental influence at any time could not be entertained. But while this is true in some cases, in many others the patients are distinctly devoid of self-control and given to exaggerate their suffering, and sometimes even to mimic diseased conditions. It is therefore extremely difficult for the surgeon, unless he makes a very careful study of the individual case, to say how far the reflex phenomena are actual or assumed, but to conclude that in all instances they are the result of morbid mental conditions is very apt to lead one into serious error.

CASE 7. *Movable right kidney, with onset of symptoms characterised by marked respiratory and digestive disturbance; local symptoms at first trivial.*—The patient I saw at Uppingham, with her family physician, and he told me that when he was asked to see her in October, 1902, the first symptoms were those of acute gastro-intestinal disturbance. On making an abdominal examination he found the right kidney freely movable, but the patient did not complain of pain in the renal region, and the urine was found to be strictly normal. Mr. H. Lyon Smith regarded the case as one in which the gastro-intestinal disturbance was due to the displacement of the right kidney. He ordered rest and the application of an abdominal bandage and kidney air-pad, with the result that she enjoyed good health till May, 1904. He noticed that the symptoms were present only while, or immediately after, the kidney was displaced; and he maintained, and in this I agree with him, that there was no "hysterical" element in the case.

The patient was an extremely quiet, sensible woman. Mr. Lyon Smith wrote to me, saying:—"In May of this year I was called hurriedly to see her, on account of a 'suffocative attack.' I found her walking about the room very flushed and anxious-looking, breathing very quickly, about 80 shallow inspirations per minute; pulse very small and thready, 110 per minute. The attack resembled one of angina, except that the face was flushed rather than pale."

The heart and lungs were free from any organic disease. During June and July, while the patient was permitted to move about, and the kidneys occasionally became displaced, these attacks were frequent; but with complete rest they soon disappeared, and with medicinal treatment her general health improved. The conclusion Mr. Lyon Smith came to was that "the suffocative attacks were caused by the movements of the right kidney setting up a sudden disturbance of the sympathetic nervous system," and when the kidney was kept at rest the attacks ceased.

The patient came to Glasgow and I had her under observation for over three weeks, and from what I saw I am convinced that Mr. Lyon Smith's explanation is correct. We are very familiar with gastro-intestinal symptoms as a result of movable kidney, but marked respiratory disturbance is uncommon. I have seen a few instances similar to, but much less marked than, the one just described, but in most of them the patients were easily excited, and in many, if not in all, I was unwilling to admit the possibility of reflex irritation. In this case I think we have clear examples of reflex functional disturbance directly resulting from the displacement of the kidney.

(*b*) *Passive congestion* as seen in chronic cardiac and pulmonary diseases or from pressure on the main veins does not cause pain, but there is a dull, aching feeling in both the lumbar regions, which is usually worst at night, is not eased by fixation, and is aggravated by firm deep pressure. On the other hand, in lumbago the pain is more severe in the morning, becomes easier as the day advances, is relieved by fixation, and is as a rule more marked on one side. In passive congestion the urine is diminished in quantity and contains albumin, and sometimes blood-casts. The effects of passive hyperæmia have already been described under movable kidney.

(*c*) *Inflammation, acute and chronic.*—In septic nephritis and other acute infective diseases pain may be a marked symptom, and the amount of suffering depends upon the degree of tension of the capsule. In acute nephritis the pain is dull and aching and there is tenderness on pressure both in front and behind and even to percussion. It is never paroxysmal and never referred. The pain is not limited to one side, but extends across the back, as generally both kidneys are involved. When it ceases to be limited to the lumbar region a general toxæmia is indicated and an unfavourable result may be expected.

The points to attend to in the diagnosis are: 1. The situation and character of the pain. 2. Presence of blood corpuscles, albumin, and tube casts in the urine. 3. General constitutional disturbance, loss of appetite, nausea, and vomiting, fever, high pulse and dry skin, œdema. 4. Scanty, cloudy urine.

(*d*) In *hydronephrosis*, as a rule, severe pain is only induced when the obstruction of the ureter is sudden and complete or nearly so, or as a consequence of pressure of the distended kidney on the neighbouring structures. In the majority of cases of chronic hydronephrosis recorded the patient suffers more from a sense of weight and dragging than actual pain. Intermittent hydronephrosis as seen in movable kidney has already been referred to, but it is also a result of temporary obstruction in the pelvis or the ureter from lodgment of calculus, blood clot or fragments of tumour. In these cases the pain assumes the characters of renal colic, and it is often very severe and widely distributed. Hydronephrosis is frequently associated with other painful affections, such as cancer of the uterus or bladder, prolapse of pelvic organs, or impacted calculus, and an amount of suffering may be attributed to the distension of the renal pelvis for which it should not be blamed.

The amount of pain does not, however, depend upon the size of the hydronephrosis, but rather upon the circumstance whether the obstruction leading to it is acute or chronic in its nature.

Sudden pain coming on in a case of chronic hydronephrosis, in which the patient has been free from suffering for a considerable time, and especially if the onset of the pain is preceded by a strain, blow, or other injury, should suggest rupture of the hydronephrotic sac into the peritoneal cavity. In such circumstances the pain assumes the characters of that of peritonitis—sudden sharp pains with marked rigidity of the abdominal walls, with general tenderness; rapid pulse becoming thready; temperature subnormal or febrile.

The points to attend to in diagnosis are: 1. Distinct swelling in the lumbar region coincident with diminution or suppression of urine, and the sudden relief of pain being associated with the passage of a large quantity of urine of low specific gravity. This may be followed by some hæmaturia. 2. Chronic dragging pain in the back with occasional exacerbations. 3. Injections of collargol into the renal pelvis demonstrate the extent of the distension when viewed with the X rays.

(*e*) In *pyelitis and pyonephrosis* pain, except of a dull, dragging kind, may remain absent for a considerable time. Severe pain may be experienced without any distension of the pelvis. The pain is of much the same character as in hydronephrosis, except that it is more marked in the kidney zones, and the tenderness on pressure over the kidney in front is more pronounced and more constant. It is associated with frequent and painful micturition, pain in the penis, and extending down the back of the thighs.

In suppurative disease of the urinary tract the effect produced by toxins may give rise to painful affections simulating lumbago, rheumatism, gallstone, renal or vesical calculus, and appendicitis, which symptoms diminish or disappear on the employment of a vaccine prepared from the organisms isolated from the urine, even although the quantity of pus and the number of organisms in the urine may not be diminished; the antitoxins evidently neutralising the effect of the toxin so that their harmful effects cease to be evident.

In suppurative diseases of the renal pelvis the absence of pain depends upon the circumstance of free escape of the excretion into the bladder. Should this be intercepted temporarily the increased intrarenal tension may cause severe paroxysms of renal colic. Pressure over the kidney may provoke much pain, and palpation by abdominal, rectal, or vaginal examination may reveal thickening of the walls of the ureter. If there is a large collection of pus in the pelvis of the kidney, and especially should the suppuration be induced by the presence of a calculus, rupture may take place into the abdomen or into the space behind the peritoneum.

The points to attend to in the diagnosis are: 1. Swelling in the lumbar region gradually increasing in size, during which time there may be little pus in the urine. 2. Pain steadily increasing, with febrile symptoms, relief of pain coincident with discharge of pus, which may be seen by the cystoscope escaping from the ureter of one kidney. If the case is a very chronic one the pus may form small casts of the ureter which lie in the bladder like a collection of maggots. These casts, of course, are destroyed when the urine is passed per urethram. Pain is usually limited to the lumbar region, and is increased on pressure, but not by movement.

(*f*) In *cystic degeneration* pain is undoubtedly rare, unless suppuration or some other complication has set in. In simple cases of polycystic kidney the patient may complain of dull aching in the renal regior, sometimes of a sickening character. Usually there is only a sense of general discomfort as a consequence of the size and weight of the kidney, but there may be exacerbations resembling renal colic if the cystic kidney has become movable. These attacks are due to transitory hydronephrosis rather than the cystic degeneration. In many cases there is much tenderness on pressure. Spontaneous pain is distinctly local and is seldom severe, unless when pressure is exercised by the weight of the kidney pressing on the lumbar plexus, or by a pyonephrosis being established.

The points to attend to in diagnosis are: 1. A non-fluctuant swelling in one or both loins—rounded, nodulated on the surface; the renal form of the organ is retained; it is not painful on pressure, nor does it increase or diminish from time to time. 2. Hæmaturia may occur, but is not frequent or severe. 3. The urine is large in amount, low specific gravity, and contains some albumin, but no pus. 4. Cardiac and arterial charge may also indicate the character of the disease.

(*g*) In *perinephritis and perinephritic abscess* the pain is severe and lacerating from the beginning and increases steadily. On account of the location of the lesion the lumbar plexus becomes involved, and consequently the pain is referred to the distribution of the nerves supplied therefrom. This explains why in chronic perinephritis the pain in the thigh or knee may be mistaken for that of hip-joint disease. Areas supplied by the anterior crural, the external cutaneous, and the genito-crural are also affected. There is great tenderness on pressure, motion is controlled, and the patient is unable to bend forward or back, associated with local elevation of temperature and rigors, preceding the appearance of swelling and fluctuation in the lumbar region.

It is usually first located in the loin, but may extend along the distribution of the nerves of the lumbar plexus later, and as a rule it continues until the pus is evacuated. In chronic cases the surgeon is apt to be deceived by the absence of pain, and the patient may be deluded into the hope that a good recovery has taken place. The constitutional disturbance, however, remains, and it is only when the pus is freely evacuated that a relief from pain can be looked for.

The points to be attended to in diagnosis are: 1. A diffuse, posterior swelling not limited to the renal region, fluctuant, and associated with fixation of the lumbar spines and curvature towards the diseased side. 2. Pain in the lumbar region increased on pressure from behind, with reflex pain in the areas of the lumbar plexus. 3. Gastro-intestinal symptoms, sickness, vomiting and tympanites, febrile temperature, white blood corpuscle count increased. 4. No hæmaturia or pyuria.

(*h*) *Tuberculosis* of the kidney is not characterised by severe pain, but commonly the patient complains of a dull, dragging sensation in the loins. Pain in renal tuberculosis depends upon whether or not the pelvis and ureters are involved in the disease. When limited to the cortex the area of tenderness is most marked in the lumbar region close to the tip of the fourth lumbar transverse process. Pain is seldom severe when the parenchyma only is implicated, and rarely amounts to more than a dull, dragging sensation in the loin. Agonising suffering is sometimes endured, however, in cases of tuberculous pyelitis and when the disease involves the ureter and bladder. This is specially seen when the flow of urine is impeded by the ureter becoming obstructed by blood clot, tuberculous débris, or by induration of the walls of the duct. In such instances the pain is associated with

frequent micturition, and comes on in paroxysms like those of nephritic colic, and is often temporarily relieved by a copious flow of urine. Strangury is present in almost all varieties of the disease, but there is seldom an escape of blood with the last drops of urine unless the bladder is involved, and the pain and frequency are almost as marked when the patient is at rest in bed as while moving about. The greatest discomfort is referred to the bladder, which, when it becomes distended, causes considerable suffering before and during micturition, but the pain is relieved immediately the bladder is empty.

The points to attend to in diagnosis are: 1. Enlargement of the kidney with tenderness most marked in the lumbar region at the point of the fourth lumbar transverse process. 2. Slight hæmaturia, polyuria and pyuria, with tubercle bacilli in the urine. 3. Frequent and painful micturition with evidence of irritation of the orifice of the ureter on the diseased side and purulent urine escaping from it. 4. Tuberculin reactions positive. 5. Febrile temperature and probably evidence of tuberculosis elsewhere.

(i) The pain associated with *renal calculus* varies according to the situation and composition of the stone, and according as there is, or is not, pyelitis. It may be stated generally that when the calculus is impacted in the substance of the kidney, and uncomplicated by pyelitis, there is comparatively little suffering, or severe pain may exist for a time and then disappear for years. In other cases there is a dull pain almost constantly present in the loin. If the calculus is in the renal pelvis, or moving freely in a cavity within the kidney, pain becomes a more marked symptom, and is not limited to the loin, but extends to the testicle, to the penis, and the inner aspect of the thigh. When the stone is impacted in the ureter the action of the psoas muscle in walking may aggravate the pain.

When the calculus is so situated the pain is dependent upon movement, being aggravated by exercise of any kind, or even by movements in bed, while complete rest generally affords marked relief. The varying pressure of the abdominal viscera, or changes in posture, may modify the pain, or palpation either in the back or of the abdomen may cause it to be temporarily increased.

Immediately a stone enters the ureter renal colic sets in, and the paroxysms, coming on often without warning, may last for hours or days. The pain is agonising, and radiates from the region of the kidney down the ureters to the thigh, penis, and testicle. When the first sickness and faintness, so characteristic of renal colic, have passed off, the patient may endeavour to relieve himself by contortions in all directions, or may be thrown into convulsions by the fearful agony he is suffering. After a period of great anguish, usually measured by hours, the pain subsides as suddenly as it came on, and the other symptoms accompanying it disappear. If the calculus passes into the urinary bladder the patient may be sensible of the fact, but if the stone has merely become displaced from the renal orifice of the ureter another paroxysm may occur at any time. In other cases the calculus remains impacted in the ureter, which becomes more or less habituated to its presence. Under such circumstances, although the pain may set in suddenly, it becomes only gradually relieved, and cessation of suffering alternates with paroxysmal attacks, probably caused by spasm of the ureters.

In renal calculus the pain is not entirely due to the direct irritation of the stone or to the obstruction produced by its impaction. Another factor must be admitted. The presence of the calculus in most instances induces a congested condition of the renal parenchyma, and this increased vascular tension is of itself the cause of much suffering. The fact is well illustrated by the relief experienced by patients after a free hæmaturia or by a cupping in the lumbar region.

CASE 8. *History of renal calculus for 20 years; repeated attacks of renal colic, and passage of stones and gravel from both kidneys; frequent hæmaturia and occasional pyuria; pain often relieved and general condition improved by a profuse hæmaturia; nephrolithotomy.*—The patient was admitted to the "Central Home" on account of an acute attack of calculous pyonephrosis in the left kidney. He gave me a long and interesting history of his illness, which commenced over 20 years ago. During that long period he had many attacks of renal colic, and not infrequently they were associated with the appearance of pus or blood in the urine. He took a very intelligent interest in his illness, had studied his own case carefully, and observed that when the pain came on, preceded by the usual premonitory symptoms of an attack, which he readily recognised, if he took a long ride on horseback until he was exhausted, a profuse hæmaturia was induced, unaccompanied by the passage of stone or gravel. This gave him much relief from the pain, and for several weeks thereafter his general health improved. A stone weighing half an ounce, and of the form and size of an index finger, was removed, and the patient made a good recovery.

It must be borne in mind that renal colic may arise from any sudden stoppage of the ureter, by disease of its walls, by a foreign body, by pressure from without, or by torsion. Hence, we find that although renal calculus is the most frequent cause of severe paroxysmal pain, this symptom may likewise occur in tuberculous disease from the passage of a caseous mass or a plug of mucus, or as a consequence of a tuberculous ulcer. In hydatid disease severe suffering may arise from the evacuation of cysts, or in tumours of the kidney from portions of the growth becoming detached and carried down the ureter.

As shown by Prout—and Dickinson agrees in his opinion—the pain is not equally severe in all varieties of renal calculus. The latter says "that of renal concretions lithic acid produces the least pain, what there is being dull, oppressive, and connected with a sense of weight; oxalate of lime causes pain of a more acute kind, and that often referred to a particular spot over the region of the kidney, and sometimes discursive, shooting in the direction of the ureter, epigastrium, or shoulder." Calculi composed of phosphates are "found to be attended by great suffering—almost unremitting, though paroxysmally aggravated."

Pain such as described must be regarded as one of the most important indications of renal calculus, and may of itself, if sufficiently characteristic and aggravated, justify the surgeon in making an exploratory incision even in the absence of other symptoms.

The points to attend to in diagnosis are: 1. The diagnosis of renal calculus has been made easy and certain by radiography. It is the short cut to diagnosis, but should not be allowed to supersede all other methods, only used along with them. 2. Pain is generally associated with hæmaturia and often with pyuria. 3. Pain is increased by manipulation and by exercise, and is relieved by rest. 4. The ureter orifice on the affected side is abnormal and the urinary shoots increased in number. 5. Reflex symptoms are common during attack of colic, and urine may be suppressed from one or both kidneys.

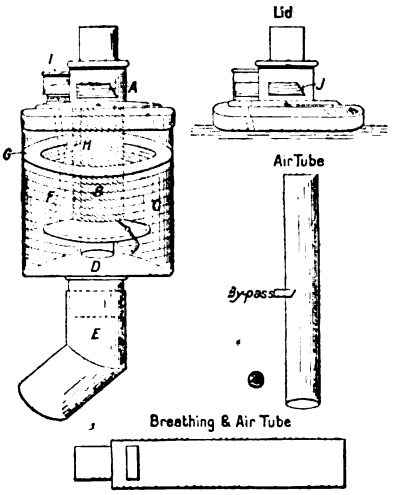
(To be concluded.)

A SIMPLE PERCENTAGE CHLOROFORM INHALER.

BY CHARLES T. W. HIRSCH, M.R.C.S. ENG., L.R.C.P. LOND.,

TEMPORARY CAPTAIN, R.A.M.C.; ANÆSTHETIST, ROYAL HERBERT HOSPITAL, WOOLWICH, ETC.

THE principle of this inhaler was originally brought out in Paris, and introduced in a modified form to English clinical medicine by Professor A. D. Waller. As a result of working with an inhaler lent to me by Professor Waller, this apparatus has been devised chiefly because it permits greater ease of application to the patient's face, irrespective of the patient's position, and a freer air-way. As the illustration shows, the apparatus consists of a metal cylinder divided by a thin domed false bottom into two chambers. The lower one is coned to take an ordinary gas face-piece, and is provided with a movable angle connexion for use when the patient is on his side or face. A central tube passes through the lid and upper chamber terminating in the false bottom, and conveys air directly to the face-piece. It is surrounded by an air cone which is expanded below over the false bottom in a baffle-plate. A by-pass passes from the upper chamber through the cone and projects into the air tube. The air cone is provided with an opening or port, admitting air to the upper or chloroform chamber. The size of the port is regulated by a movable



The percentage chloroform inhaler and its component parts:

A, Port or air inlet closed.
B, Absorbent wick for chloroform around central cone.
C, Absorbent wick around walls of chamber.
D, Hollow dome.
E, Detachable tubing for fixing to respirator.
F, Chloroform tube.
G, Baffle-plate.
H, Chloroform by-pass to air chamber.
I, Inlet for chloroform.
J, Port opening left to right.

collar on the lid, and an indicator shows the percentage of chloroform which is passing to the face-piece. The upper chamber is surrounded inside with wick, and also has wick round the inner cone. Both wicks touch the bottom of the upper chamber, the latter one by passing through a hole in the baffle-plate. The lid is removable, but to save taking it off during the administration of the anæsthetic a screw-on cap in the lid permits the addition of chloroform to the upper chamber. The wicks can be removed, and the whole apparatus can then be sterilised.

To use the inhaler 6 drachms of chloroform are placed in the upper chamber, which saturates both wicks and leaves a layer on the false bottom, below the baffle-plate but not touching the latter. The port is closed. An ordinary gas face-piece is attached to the coned end, either directly if the patient is on his back, or if in another position by means of the detachable angle-piece. The face-piece is then adjusted to the patient's face, so that the only admission of air is by the air-tube. Pure air is then breathed. As the port is opened chloroform vapour is drawn through the by-pass in the same way as air is sucked in a Bunsen burner or Fletcher gas stove. The expirations of the patient maintain a constant temperature in the chloroform chamber, and from actual experiments at that temperature the dial on the lid is graduated to show the percentage being inhaled. In use it is found advisable to start with the port closed, indicator at zero, and to take 10 minutes in passing gradually to 2·5 per cent. when surgical anæsthesia is generally produced. A higher percentage is rarely needed. Anæsthesia when obtained can be maintained at from 1 to 2 per cent. The only important point is to make a gas-tight joint between the face and inhaler, which can always be obtained by the use of an appropriate sized face-piece.

I have used this apparatus in more than 1000 cases, some of over two hours' duration, and have found it most efficacious. The advantages claimed are the ease of adaptation to the patient's face, irrespective of his position, the perfect air-way, and the certainty of the percentage of chloroform, as well as the simplicity of the inhaler, which is without valves or parts that can get out of order. Experiments made by drawing air by aspiration from the chloroform chamber have not revealed any increase of carbon dioxide, thus showing the absence of rebreathing.

The apparatus can be obtained from Mr. Cliff, motor engineer, of Well Hall, Kent.

I wish, in conclusion, to express my indebtedness to Professor Waller, who has kindly verified the chloroform percentages on his chloroform balance.

Kensington Palace Mansions, W.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A CASE OF ECLAMPSIA WITH TRIPLETS. TWO OF THE CHILDREN BEING UNITED.

BY ROBERT JARDINE, M.D. EDIN., &C.,

PROFESSOR OF MIDWIFERY, ST. MUNGO'S COLLEGE; PHYSICIAN AND GYNÆCOLOGIST, GLASGOW ROYAL MATERNITY AND WOMEN'S HOSPITAL.

THE following case of eclampsia is an interesting one, as it was one of triplets with two of the children united. With triplets the risk of eclampsia is very much greater than with single pregnancies, as the strain upon the mother's system is enormously increased.

Mrs. ——, primigravida, aged 23, was admitted to the Glasgow Royal Maternity and Women's Hospital on Dec. 5th, 1915, suffering from eclampsia; there had been five severe fits. On admission she was very obstreperous and was with difficulty kept in bed. She complained of violent headache and failing sight, but was not quite blind. There was great œdema of the face, body, and legs. The abdomen was very much distended, and on palpation it was impossible to make out any fœtal parts, neither could the fœtal heart be heard. The case was looked upon as one of multiple pregnancy. The urine was heavily loaded with albumin. The os uteri admitted two fingers and the cervix was taken up. Labour had commenced. There was a head well engaged in the pelvis. She was supposed to be eight months pregnant.

The patient was given a saline transfusion of 2 pints (5 i. each of sod. chlor. and sod. acet. to the pint) under the breasts, a large dose of Epsom salts by the mouth, and 0·5 c.c. trivalin hypodermically. A fit occurred after the transfusion, but there were no more. She soon became quiet and the labour passed off. On the 6th the sight was

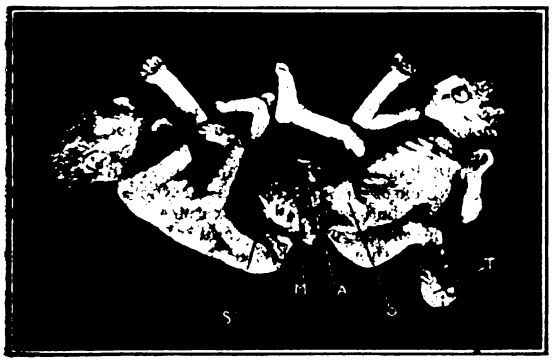
normal and the headache had ceased. The bowels had been well cleared out and the kidneys were acting well. There were no labour pains.

On the 7th labour came on again, and at 6 P.M. the membranes ruptured spontaneously. As the head did not advance it was decided at 8 P.M. to deliver with forceps. The instruments were applied by Dr. Grace Whish and the head was easily delivered, but when the body came down there was difficulty with the breech. Another breech was discovered to be coming and the two were attached. The two children were got away by making strong traction upon the first one; the perineum was torn. Another child was found to be in the uterus in an unruptured sac. The membranes were ruptured and a live male child was delivered with forceps.

The uterus remained very flabby and a severe post-partum hæmorrhage came on. The two placentæ were removed, and as the uterus did not retract under the stimulus of kneading and a hot douche, it was quickly packed tightly with iodoform gauze. Hypodermic injections of ergotin and pituitrin were given and a saline transfusion of two pints. The pulse, which was very feeble, soon began to improve and by next morning was fairly good, about 108. She had passed a large amount of urine and the albumin had lessened. When the packing was removed the uterus was very firmly retracted, and there was no bleeding. Considering what the patient had come through she was very well, and the prognosis looked hopeful, but next morning she began to complain of severe pain at the base of her right lung, and her breathing became very embarrassed. It was evident that pneumonia was setting in. Hot antiphlogistine applications somewhat relieved the pain, but the breathing became more embarrassed and the pulse began to fail. Death occurred at noon, 40 hours after delivery.

The united children (females) were alive and apparently strong. They weighed 6 pounds. As they lay covered in a cot buttock to buttock they looked like two normal small children. Urine was passed, but no meconium. Small quantities of milk were taken quite readily. They did not seem to suffer much, but gradually lost flesh, dying on the 13th at 6.10 A.M. The single child, a male weighing 6 pounds, was a fine sturdy little fellow, and was thriving well a few days later when taken home.

The placentæ weighed 1½ lb. each. The cord of the single child was 20 inches long. The united cord, which was only about 3 inches long, had been torn off at the placenta. The shortness of the cord had prevented the descent of the head.



Photograph of the twins showing the two connecting stalks (S), the central mass (M), the severed edge of the fused amnions (A), and the talipes (T). The insertion of the umbilical cord was on the opposite side of the mass from M.

I am indebted to Dr. J. F. Gemmill, lecturer in embryology, Glasgow University, for the photograph here reproduced, and for the following note:—

"Dr. Jardine's specimen is of very great interest for the reason that it appears to be the only well-authenticated instance among mammals of twins with ventral union limited, as far as the parietes are concerned, to the umbilical region. With a single doubtful exception dating back to the fourteenth century, all other recorded examples of ventral or "Siamese twin" union exhibit fusion to a greater or less extent, either in the thoracic (thoracopagus) or in the pelvic (ischiopagus) regions. The sub-type omphalopagus must accordingly be recognised in the future classifications of mammalian double monstrosities, its position being intermediate between the two sub-types just named. A detailed account of the specimen is being prepared by one of my students, Mr. James Stewart, and myself."

Glasgow.

A CASE OF FULL-TERM EXTRA-UTERINE PREGNANCY; OPERATION.

BY J. F. DEVANE, M.D. N.U.I., F.R.C.S. IREL.,
HONORARY SURGEON, LIMERICK COUNTY INFIRMARY, AND ST. JOHN'S HOSPITAL, LIMERICK.

FULL-TERM extra-uterine pregnancy is a rare condition, and the following notes on a case may be of interest.

The patient, aged 38, was married seven years ago. Three months later she had a miscarriage, was curetted, and a year afterwards a child was born. In February, 1913, she had a second miscarriage. Menstruation was then regular until May, 1914, when it ceased, but returned again in July; from then until December she was unwell every two or three weeks, and suffered from slight abdominal pains and general discomfort. In December menstruation stopped and did not return for five months—i.e., until April, 1915, a week before admission to hospital. At that time she had a "flooding" and bearing-down pains. A midwife attended her and told her she had had a miscarriage—that "the little birth had come away," but that she had a large tumour for which she would require hospital treatment. On examination the uterus was found enlarged, reaching two inches above the umbilicus; the os was patulous and admitted the index finger; there was a blood-stained discharge from the vagina. Behind the uterus a large cystic tumour was felt filling up the pelvis and occupying most of the abdomen. Lactate of calcium was administered for a few days. The abdomen was opened by a long median incision. The uterus was first sought for and found above the pubes, in contact with the anterior abdominal wall. Behind the uterus a large cystic tumour was found filling up the pelvis below and reaching almost the diaphragm above. Coils of small intestine were adherent to its anterior and upper surfaces. The adhesions were sponged off, or ligatured and divided, and the tumour was brought partly into the wound and packed round with sponges. A large trocar was introduced and several pints of dark-coloured fluid were withdrawn. The sac was then slit up freely and a well-developed full-term male child was found lying in the left occipito-anterior position. The cord was divided and a stillborn child extracted. A large placenta was found adherent to the floor of the pelvis and stretching up along the back of the uterus. This was sawn off with the finger-tips. Considerable hæmorrhage occurred from some of the vessels near the centre of the placental site, where thrombosis had not completely taken place. This was dealt with by forceps, and hot sponge pressure, and a saline infusion was given into each axilla. The superfluous portion of the sac was removed, and remaining pelvic part was plicated by means of a couple of rows of purse-string suture passed around its inner surface; thus the large pelvic space was converted into a cylindrical tube. This was sutured to the lower angle of the abdominal wound and a drainage-tube passed into it. The drain was removed on the third day; a slight seropurulent discharge persisted for a fortnight from the gestation sac. The remainder of the abdominal wound healed by first intention.

The condition might easily have been mistaken for a five months' miscarriage, associated with a large ovarian or intraligamentous cyst. The duration of the amenorrhœa corresponding with the size of the uterus, the signs of recent delivery, and the nurse's statement pointed to a miscarriage; the gestation tumour resembled a large cyst—there were no fœtal movements, no fœtal heart, the excessive amount of liquor amnii and the adherent intestine rendered difficult the palpation of the fœtal parts, whilst the large placenta spread out behind the uterus masked the fœtal head.

A report of the patient on Feb. 14th, 1916, states: "Menstruation returned three months after the operation and lasted eight days. She has been unwell about every three weeks since then, and at the present time she is feeling quite strong and healthy."

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF OPHTHALMOLOGY.

Discussion on Disturbances of Vision from Cerebral Lesions, with Special Reference to the Cortical Representation of the Macula.

A MEETING of this section was held on March 22nd, Sir ANDERSON CRITCHETT, Bart., C.V.O., being in the chair.

Colonel W. T. LISTER, C.M.G., A.M.S., and Lieutenant-Colonel GORDON HOLMES, R.A.M.C., read an introductory paper upon the subject to be discussed. They stated that in their work at the base hospitals in France during the past 18 months they had observed a very large number of cases in which the vision was affected by lesions of various portions of the optic system. By selecting for thorough examination a certain number of suitable cases, a group of facts had been collected which had an important bearing on the cerebral localisation of vision, more particularly on the representation in the cortex of different regions of the retina. It might be objected, they said, that as the observations were necessarily made at an early stage after the infliction of the injury some of the effects observed might have been due to functional disturbances rather than to local injuries of the corresponding cortical areas or their centripetal fibres. But if it could be shown that there was a constant relation between the probable site of the injury and the form of the visual defect, certain general conclusions would be at least justifiable. The injuries in the cases referred to included penetrating wounds of the cranium by rifle bullets, shell fragments, and shrapnel, as well as local concussion and depressed fractures. The probable positions of the cerebral injuries were determined by careful measurement of the entrance and exit wounds from fixed points, such as the external occipital protuberance, the relation of which to the calcarine fissure and optic radiations being known, by means of radiographic examination, and by observations made at the time of operation, &c. The notes of 21 cases were recorded. The first group contained instances of quadrantic hemianopia, and from these it was concluded that the upper half of each retina is represented in the upper part of the visual area, and *vice versa*. In the second group several cases of absolute or partial central scotoma were described; in all these the lesion was probably limited more or less completely to the posterior extremities of both occipital lobes. Consequently it appeared probable that the centre for direct macular vision lay in the posterior part of the visual area. This conclusion was supported by the fact that among over 2000 cases of head injuries they never saw a central scotoma where a direct injury of the occipital poles could be excluded. Further, they described cases of homonymous hemianopia with loss of central vision in the opposite halves of the visual field in cases where the optic radiations or the visual centres had been destroyed on the one side, while the lesion was limited to the occipital pole of the other hemisphere. The above conclusion was also supported by another large group of cases—viz., those with paracentral scotomata. In each of these cases the lesion involved only the posterior part of the visual area, and it was found that when the upper portion of the posterior part of the calcarine cortex was injured, the paracentral scotoma involved central vision immediately below the fixation point in the opposite halves of the visual field, and *vice versa*. It was consequently probable that the upper part of the macula lutea and the surrounding retina were also represented in the upper part of the visual area, and *vice versa*. They believed that the hypothesis of bilateral representation of the macula was unnecessary and incorrect on the following grounds—viz., that the above-mentioned paracentral scotomata usually extended right up to the fixation point, and also that in the hemianopia produced by penetrating wounds which involved one occipital lobe, there was not usually the "macular escape," such as was so frequently seen in the hemianopia due to vascular lesions. They suggested that this "macular escape" was probably due to the fact that the tip of the occipital lobe, in which central vision was represented, was a watershed area, which might draw its blood supply from either the middle or the posterior cerebral arteries; the variation in the respective distribution of these arteries, they believed, might account for the escape or the involvement of vision in the neighbourhood of the fixation point. The interesting question was raised as to whether vision for colours might be dissociated from that for white—in other words, whether an achromatopsia could be produced by cerebral lesions. They considered, however, that they had gleaned no conclusive evidence that achromatopsia, with intact vision for white, was produced by cerebral lesions which involved either the cortex or the optic radiations. The authors' conclusions, which they did not yet regard as final, were formulated as follows: 1. The upper half of each retina is represented in the dorsal, and the lower in the ventral part of each visual area. 2. The centre for macular or central vision lies in the posterior extremities of the visual areas, probably on the margins and lateral surfaces of the occipital lobes. 3. That portion of each upper quadrant of the retina in the immediate neighbourhood of, and including the adjacent part of the fovea centralis, is represented in the upper and posterior part of the visual area in the opposite hemisphere, and *vice versa*. 4. The centre of vision for the periphery of the retinæ is probably situated in the anterior end of the visual areas, and the serial concentric zones of the retina from the macula to the periphery are probably represented in this order from behind forwards in the visual area. The paper concluded with a grateful acknowledgment of the assistance received by the authors from the medical officers of the various hospitals in which the cases were observed, and their thanks to Captain Curtis Webb for help in the preparation of the illustrations.

Sir ANDERSON CRITCHETT, in expressing the gratitude of the section to the authors for their painstaking research, referred to the rapid strides made by brain surgery, and the unexampled opportunities afforded by the present conflict to make advances in surgical and medical knowledge.

Lieutenant-Colonel R. H. ELLIOTT asked whether Colonel Lister and Colonel Holmes were able to confirm the estimate as to the efficacy of the steel helmet in preventing head injuries. He also referred to the greater severity of wounds inflicted by bullets which struck in the first 250 yards of their flight, before they had settled down to a steady onward course, as compared with those which found their billet at distances between 250 and 1000 yards.

Captain A. W. ORMOND suggested a possible confirmation of the authors' thesis in the central scotoma met with in some people who were subject to megrinous attacks. It was probably a vascular phenomenon, dependent upon the macular centre being placed at the posterior pole of the occipital lobe.

Mr. LESLIE PATON urged ophthalmologists in this country who received cases from France after the shock and the acute symptoms had subsided, to exercise great care in the taking of the fields of vision and the construction of perimeter charts (though not with the McHardy perimeter), and follow the cases up as far as possible, keeping a record of their sequelæ, and in that way assist in making the investigations of Colonel Lister and Colonel Holmes of abiding value.

Colonel HOLMES briefly replied, remarking that as the steel helmets had only recently been issued to the British Army it was as yet too soon for conclusions to be drawn.

SECTION OF DERMATOLOGY.

Exhibition of Cases, Specimens, &c.

A MEETING of this section was held on March 16th, Dr. J. H. STOWERS, the President, being in the chair.

The PRESIDENT paid a warm tribute to Professor James Clarke White, whose death had deprived dermatology of one of its leaders. The deceased was professor of dermatology at Boston.

The following cases were shown:—

Dr. J. M. H. MACLEOD: A case for diagnosis. The patient, a woman aged 48, had a condition of Bilateral Facial Hemiatrophy. Eight years ago she had an eruption which was diagnosed as lupus erythematosus. The lesions disappeared quickly under treatment, but as each fresh lesion appeared and vanished it left an atrophic patch behind it.—Dr. W. KNOWSLEY SIBLEY considered that it was a case of sclerodermia, which had followed the cutaneous eruption.—Dr. F. PARKES WEBER thought it was an ordinary case

of bilateral facial hemiatrophy, possibly caused by the previous eruption, with which the PRESIDENT agreed.—Dr. S. E. DORE stated that he had had a similar case of atrophy which had followed lupus erythematosus.

Dr. G. PERNET: 1. A case of Staphylococcia in a girl with Xerodermia (staphylococcia *en nappe et en foyers à progression excentrique*).—Dr. DORE and Dr. H. G. ADAMSON considered it to be an ordinary case of infantile eczema.—Dr. PERNET objected to the diagnosis of eczema, as the lesions began as pustules, on a xerodermic skin, and not until the child was two years old.——2. Chancre on the lower lip.

Dr. E. G. GRAHAM LITTLE: Diffuse Papillomatosis (?) Acanthosis Nigricans. A woman, aged 52, had first of all some ulceration of the left leg, which was followed by an elephantiasic condition, with marked verrucose lesions around the ankle-joint.—Most of the members thought the condition was either of septic, syphilitic, or tuberculous origin.

Dr. MACLEOD: A painting of a very similar condition, which followed a septic ulcer.

Dr. A. EDDOWES: Acute Lupus Erythematosus with Nodular Necrotic Tuberculides of the Extremities. The patient was a woman, aged 27, with marked lupus erythematosus of the face and papules on the arms and legs —The section considered it to be a case of acute lupus erythematosus in which the prognosis was bad. It was the general impression that those cases ended fatally from a pneumococcic infection.

Dr. H. SPENCE (introduced by Mr. J. E. R. MCDONAGH): A Recurrent Syphilide simulating a Reinfection. The patient had a papulo-necrotic chancre in June, 1915, which was followed by neither inguinal adenitis nor by a rash. The sore healed up under four injections of "606." In January, 1916, another sore appeared on the penis which bore an exact resemblance to the original sore. There was also a lesion on the tongue, which simulated a primary sore. The other lesions were different in character.—Captain C. H. MILLS and Dr. PERNET thought the lesions on the penis and tongue were gummata.—Mr. MCDONAGH, who had seen the case originally, said he could not distinguish between the two sores on the penis and that the lesion on the tongue simulated a chancre.

Dr. J. L. BUNCH: Acute Sclerodermia with Sclerodactylia. The case was exhibited with the idea of eliciting the opinion of the section as to the advisability of treating the case by thyroid implantation. Implantation was only advised provided the patient showed an idiosyncrasy to small doses of thyroid. Its effect was considered to be temporary only.

Dr. ADAMSON: Microscopic slides of a unique case of Sweat Gland Tumour.

Dr. GRAHAM LITTLE also showed slides of the case he exhibited and of a tumour which had been removed from the vulva.

SECTION OF ELECTRO-THERAPEUTICS.

Experiments and Experiences with the Coolidge Tube.

AT the meeting held on March 17th under the presidency of Dr. W. IRONSIDE BRUCE, the section discussed Experiments and Experiences with the Coolidge Tube.

Dr. R. KNOX opened the discussion. He said that the Coolidge tube possessed, among other advantages over ordinary X ray tubes, the quality of extreme adaptability; it could be used continuously over long periods without risk of damage to the tube, with currents of any strength likely to be required for examinations. Four or five milliampères could be passed through it continuously for many years. Care must, however, be taken to protect both radiologist and patient, and sittings should be of as short a duration as possible. This tube was an instrument of precision in advance of anything of its kind yet produced. It could easily be adjusted for use in various parts of the body, and could be so arranged as to give off rays of varying penetrative power. For single-flash exposures it constituted the ideal tube. He had been carrying out a series of experiments, so far of an elementary character, with the object of ascertaining the best working conditions for the tube in radiography and radioscopy. The tube was altered from "soft" to considerable "hardness" in a few seconds. He hoped it would soon be possible to standardise radiographic exposures, and to make some advances in the measurement of X ray dosage. The chief merits of the tube were seen in therapeutic work; indeed, it would be difficult to conceive of any improvements likely to render it more efficient. Within reasonable safety limits, it could be used for many hours daily, and at the end of the day would continue its output of uniform radiations. One such tube used at the Cancer Hospital was worn out after 800 exposures; it was then repaired and still remained in use. The others used there had maintained their efficiency all through. Dr. Knox gave a full description of his investigations. The researches included both screened and unscreened rays, and their penetrating power into 4-inch thicknesses of beef. The tube made it possible to attack a deep-seated growth from all aspects, and thus as searching a treatment by X rays was possible as was obtained by embedding radium. The advent of this tube, said Dr. Knox, had opened up many interesting fields for experimental research, and he hoped that doctors would combine in an endeavour to standardise X ray exposures in therapeutic doses, a hope which the new tube seemed to justify.

Sir JAMES MACKENZIE DAVIDSON exhibited some interesting pin-hole radiograms, and showed from experiments the great need of the radiographer protecting himself when using the tube, as the rays were emitted from the back as well as the front.

Dr. G. HARRISON ORTON said he had used the Coolidge tube 14 months for deep therapy, and he did not think anybody who had employed it would revert to the ordinary X ray tube. It saved an enormous amount of time, and without forcing matters or overheating it was possible to turn a pastille in two minutes. The tube could always be adjusted to any required penetration, hence an exact repetition of a dose could be given. He found it particularly good for epilation, and by giving two separate 10*x* doses, with an interval between, dermatitis was avoided. In starting with a new Coolidge tube only about a 4·4 ampère current should be used until the anti-cathode became properly hot; otherwise there was apt to be sparking outside, and the tube was not absolutely constant until then. When in working order the tube required no cooling mechanism.

Dr. N. S. FINZI spoke of his clinical experiences with the tube. He was not sure that the tube yielded the best results in delicate detailed radioscopy, as compared with the ordinary tungsten target. For bismuth-meal radioscopy the Coolidge tube was ideal. For radio-therapy with the Coolidge he had been trying to get the exposure down to the shortest efficiency period. He had been able to epilate a whole scalp in five areas well within half an hour. Each exposure varied from 48 to 54 seconds. He agreed with Dr. Harrison Orton that no one who had used the Coolidge tube would care to go back to the ordinary tube. He preferred the Wehnelt brake to the mercury brake.

Dr. C. W. S. SABERTON spoke of a daily experience with the Coolidge tube for eight or nine months. He had not obtained such good negatives with this tube as with the ordinary X ray tube, but the type of rays emanated was uniform in the case of the former. In tinea cases his experience was not the same as Dr. Harrison Orton's; he required a larger dose to produce epilation. He advocated the measurement of dosage of X rays after filtration.

Dr. S. RUSS remarked that Professor Rutherford and his colleagues found they could not produce X rays of such short wave-length as the gamma rays of radium, the ratio being as 1·7 to 0·7. The difference in the radiographic results from ordinary tubes as compared with those of the Coolidge tube noticed by Dr. Finzi was probably due to the fact that the radiations came in one case from the whole stem of the anti-cathode. He felt that radiographers and physicists owed a great debt of gratitude to Mr. Coolidge for his invention, which he regarded as the most wonderful X ray tube which had ever been constructed, and that much more would be revealed by it in future.

Dr. KNOX briefly replied.

THE CHILD STUDY SOCIETY.—At a meeting of this society on March 16th Dr. Ernest Jones, discussing the Unconscious Mental Life of the Child, said three critical questions arose in such a study: (1) The extent of the justification in transferring the conclusions based on the abnormal to the normal; (2) the value of the examination of the adult mind as a basis for the study of the mind of the child; (3) the extent of the reliance on the psycho-analytic method of research. The last of these he did not deal with. In reference to the first question, the differences between the working of a normal and of a neurotic mind were only those of degree; disease added no new element, though the grouping of forces might be altered and the relative perspective

modified. On the second question, he said the saying "The child is father to the man" was taken seriously by the psycho-analyst. The unchanged form of the infantile mind was buried in the depth of the unconscious, constituting its characteristic. In the psycho-analytic sense the expression "unconscious" meant processes without the conscious *ego* but dynamically active in the production of external manifestations; those of high significance to the personality, and endowed with certain attributes, sharply distinguishing them from the familiar type of mental function. Many of the child's thoughts could not be communicated because he was unable even to formulate them. From the beginning the child was protected from painful stimuli by the immediate gratification of his wants. There were two clearly marked stages in mental development—the illusory and the actual—and these were always at work. The control of the primary system of thought by the secondary remained imperfect throughout life. In reference to the question of sexuality in children there existed a strong tendency to artificially restrict the conception of sexuality. It was ridiculous to suppose the sexual life to be non-existent until it took definite form at puberty; its earlier manifestations were tentative and preparatory. Later there came a process of refinement and the elimination of discarded elements. The unconscious was naturally unmoral, because it dated from a period preceding knowledge of good and evil, and had remained impervious to such knowledge. All that could be done was to modify the manifestations of the unconscious when they merged into the conscious. Much harm could be avoided by putting into practice some of the elementary principles of medical psychology; there was too much repression of tendencies, rather than a seeking to utilise those energies and tendencies for useful social purposes.

Reviews and Notices of Books.

Water Purification Plants and their Operation. By MILTON F. STEIN, Assoc.Mem.Am.Soc.C.E. New York: John Wiley and Sons; London: Chapman and Hall, Limited. 1915. Pp. 258. Price 10*s.* 6*d.* net.

THE author deals with the subject of water-supply from three points of view—that of the engineer, the chemist, and the bacteriologist. It is rare to find amongst water engineers the three qualifications, and such a combination of knowledge must be of great service to its owner and his employers. We may instance the advantage to a water engineer of being able to conduct bacteriological tests upon the spot. In his chapter upon this subject Mr. Stein points out that the making of bacterial tests requires considerable time, and for this reason it is often customary in small plants to send weekly or bi-weekly samples to some reliable testing laboratory for bacterial counts and coli determinations. He does not, however, recommend this plan, since it does not afford a continuous record of the bacterial efficiency of the filters, and between samplings the output may be high in bacteria for several days without the knowledge of the operator. Similarly valuable is it for the water engineer not only to be able to make chemical and physical examinations but to understand the significance of the results, and in this connexion Mr. Stein deals with many important questions in a manner which should be clear even to the non-technical reader. The chapters on types of purification plants, on filtration, coagulation, and sterilisation, evidence an intimate acquaintance with purifying methods and an appreciation of the watchfulness which is required to effect and to maintain the purity of the water-supply. The book is a valuable addition to the literature of an important subject and throws an interesting light on the up-to-date methods of the water engineer.

LIBRARY TABLE.

A Text-Book of Elementary Chemistry. By ALEXANDER SMITH, B.Sc. Edin., Ph.D. Munich. London: G. Bell and Sons, Limited; New York: The Century Co. 1915. Pp. 463. Price 5*s.* net.—The treatment of the subject is upon somewhat novel lines, as the author proposes to meet the needs of those who do not later continue the study of chemistry. He suggests that in the minds of such readers an interest in chemistry is best awakened by calling attention to materials and processes used in the household and in commerce. Such a book would have a limited value if at the same time the normal student was not considered, and so the plan includes a presentation of the elements of the science in a somewhat rationalised form, the principles underlying applications being carefully explained. The author makes the curious observation that in the general study of the subject the interests of the two sexes are in part different. Thus, he regards explosives, metallurgy, and the study of mortar and cement as of interest especially to males, while plastics, starch, sugar, soaps, and the nature, preparation, and digestion of foods make, he considers, special appeal to females. We much doubt the utility or rationality of this differentiation. The book gives a clear and homely account of the elements of the subject, and a good deal of really useful ground, practical and theoretical, is covered.——The same author has written *A Laboratory Outline of Elementary Chemistry* (same publishers, pp. 152, price 2*s.* net) as a companion to the text-book. His descriptions are in simple terms and he has, as far as possible, avoided the use of complicated apparatus and of rare or expensive chemical reagents. In short, the spirit of the "Text-book" is pursued in the "Laboratory Outline," which is a good example of clear practical teaching.

Physical Chemistry for Schools. By HENRY JOHN HORSTMAN FENTON, M.A., Sc.D., F.R.S. Cambridge: At the University Press. 1916. Pp. 215. Price 3*s.*6*d.* net.—In this acceptable little volume we have, in as simple terms as possible, the elementary principles of physical chemistry. We thoroughly approve of the author's plan to reduce mathematical expressions, when that can be done, and agree that students are often "liable to be scared away from the subject when it is presented in the more elaborate and mathematical form." And so, in accordance with this promise, we find an account of such phenomena as solution, osmotic pressure, adsorption, colloidal condition, catalysis, migration of ions, and so forth, which the reader will readily understand, provided he has some elementary knowledge of the subjects apart, i.e., chemistry and physics. We welcome this neat little compendium because of the growing importance of physical chemistry to medical science.

Food Analysis: Typical Methods and the Interpretation of Results. By A. G. WOODMAN. London and New York: McGraw-Hill Book Company (Inc.). 1915. Pp. 510. Price 12*s.* 6*d.* net.—This work will prove a useful guide to the student who requires to master the general principles involved in the analysis and examination of foods. The author has covered a fair amount of ground, and does not pretend to have exhausted the subject. He has chosen to deal with certain typical foods to illustrate, as he says, important methods or characteristic methods of food analysis. The aim of the book is to introduce general principles rather than to give counsel to the man in actual practice. Nevertheless, we have here the outlines of certain

progressive methods of analysis which will be of assistance to the consulting analyst. As examples, we may cite the chapters on the analysis of potable spirits (based largely on French and English work), on food colours and preservatives, and on cocoa and chocolate. The information is here largely based we feel sure, upon the author's laboratory experience, and that is a valuable feature of the book.

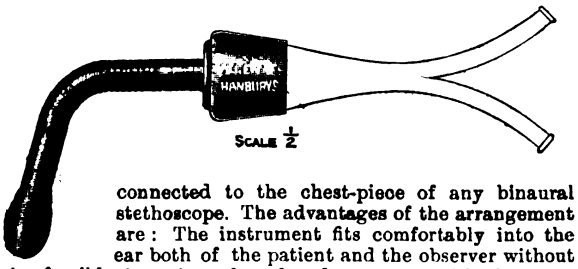
The Housing of the Working Classes Acts, 1890–1909, and the Housing Acts, 1914, Annotated and Explained together with the Rules, Regulations, Forms, and Instructions of the Local Government Board. By CHARLES E. ALLAN, M.A., LL.B., assisted by FRANCIS J. ALLAN, M.D. Edin., D.P.H. Fourth edition. London: Butterworth and Co., and Shaw and Sons. 1916. Pp. 493. Price 12*s.* 6*d.* net.—The preceding edition of this useful book has been for some time out of print. The work is so well known that a new edition requires little in the way of special commendation. Those who have to carry out the statutes and regulations brought together within its pages will find the information in convenient form, and will appreciate the care taken to avoid lengthy notes as well as all details which might render an everyday work of reference too bulky. It will be noted that Dr. F. J. Allan, an experienced medical officer of health in a metropolitan borough, assists in matters relating to practice. Such collaboration constitutes a very useful feature of the book, as for the carrying out of the Acts medical officers of health are so largely responsible. These officials, busy as they may have been before the war, are to-day likely to find their energies still more severely taxed. Anything that simplifies their present work is welcome, while this volume suggests important directions in which, when an honourable peace allows us, we may make good some of the defaults compelled by war.

A Pocket Medical Dictionary. By GEORGE M. GOULD, A.M., M.D. Seventh edition. London: H. K. Lewis and Co., Limited. Pp. 1003. Price 5*s.* net.—This is the seventh revised edition of a well-known pocket medical dictionary which contains 35,000 words. The claim of the author is that the dictionary gives the pronunciation and definition of the principal words used in connexion with, and in relation to, medicine; and the popularity which the work enjoys, as shown by its successive reissues, coupled with the favourable notices which each edition has received in the press, prove that the claim has been made good. Great condensation has necessarily been employed, for it is obvious that such a number of definitions, covering the vocabulary of half a dozen ancillary sciences, and all the procedures and abstract notions arising out of practical work or scientific theorising on those sciences, could not otherwise be included in any book that could reasonably be described by the word "Pocket." This condensation, however, has not resulted in inaccuracy, and on the whole has not made for vagueness. It is quite clear that the meaning of such words as, say, "catabolism" (Dr. Gould prefers a C) and "neurasthenia"—we select two words at hazard—cannot be defined in a line, and yet the notion given in the dictionary by the definition of these words is quite sufficient to meet the needs of anyone who should require to look out their meaning. Various tables of muscles, nerves, arteries, and the micro-organisms will be found useful, and the same may be said of the comparison of thermometric scales and of the dose tables compiled from authoritative works on materia medica.

New Inventions.

ADAPTER TO CONVERT BINAURAL STETHOSCOPE INTO OTOSCOPE.

THE simple contrivance for converting a binaural stethoscope into an otoscope here described will, I trust, prove as useful to others as it has been to myself. I have not seen a description of a similar instrument. The adapter, as will be seen from the illustration, consists of a vulcanite tube about four inches in length bent at a right angle in its centre. The aural end is like the termination of an ordinary otoscope, but the proximal end is attached to a soft rubber adapter, easily



connected to the chest-piece of any binaural stethoscope. The advantages of the arrangement are: The instrument fits comfortably into the ear both of the patient and the observer without the forcible insertion often found necessary with the monaural otoscope, but not at all pleasant to either of the persons concerned. The patient can hold the vulcanite tube in his ear and his attention is thus withdrawn from the catheter. The appliance has all the advantages of binaural hearing for the observer, and it is more compact than the ordinary type of otoscope, since extra tubing, in addition to that used with the stethoscope, is not required.

The adapter has been made by Messrs. Allen and Hanburys, Ltd., Wigmore-st., London, W., from whom it can be obtained.

Hove. NOEL ADLER, L.S.A.

LITERARY INTELLIGENCE.—The Physiological Society will very shortly issue a monthly journal, entitled "Physiological Abstracts," containing abstracts of papers in physiology, comparative physiology, biochemistry, and allied subjects, edited by Professor W. D. Halliburton, King's College, London, to whom reprints of papers should be sent. Those interested and desiring further information should communicate with Professor W. M. Bayliss, F.R.S., University College, London. The journal will be published by Messrs. H. K. Lewis and Co., Limited, 136, Gower-street, at an annual subscription of 25*s.*, post free.

HOSPITALS IN BIRMINGHAM.—The annual reports of the two large Birmingham hospitals appear simultaneously. According to the 136th annual report of the General Hospital the number of in-patients under treatment during the year 1915 was 5416, including 908 children under 12 years of age. The out-patients numbered 50,879. The ordinary expenditure was £34,051 11*s.* 7*d.* and the extraordinary £146 14*s.*, while the sum of £1132 14*s* 2*d.* was transferred to the Jaffray Branch Hospital account to meet the deficit of that institution. The total expenditure for the year was £35,330 19*s.* 9*d.* The deficit amounted to £13,213 1*s.* 11*d.* Nine members of the medical and surgical staff have been called up for service in the army, and this has added greatly to the work of the remaining members of the staff, who are practically all attached to military hospitals in Birmingham. A total of 75 former sisters and nurses are now serving in naval and military hospitals at home or abroad.—The seventy-fifth annual report of the Queen's Hospital shows that during the year 1915 3001 in-patients were treated and 24,397 out-patients. The income for the year was £12,527 and the expenditure £18,689, leaving a deficit of more than £6000. In common with other hospitals heavy demands have been made upon the services of the staff for military duties, but the work of the hospital has been carried on without interruption. Eleven members of the medical and surgical staff are attached to local military hospitals, and those who have received commissions or have enlisted include 13 from the medical staff, 31 medical students, and 27 of the nursing staff.

Reports and Analytical Records
FROM
THE LANCET LABORATORY.

INTRAMINE.

(THE BRITISH DRUG HOUSES, LIMITED, 20 TO 30, GRAHAM-STREET, CITY-ROAD, LONDON, E.C.)

THE chemo-therapy of intramine was described in THE LANCET of Jan. 29th, 1916. It was found to have a simpler composition than the arsenical types of syphilis remedies. It is a di-ortho body, and its chemical construction is described by its name, which is di-ortho-amido-thiobenzene. It is suggested that in early syphilis salvarsan should be administered first and then intramine, the order being reversed in late syphilis. The result of this treatment is spoken of most favourably. We have had submitted to us an ampoule of intramine, which contains a gramme of the substance emulsified in 10 c.c. of a cream. The intramine is administered by intramuscular injection in the form of a cream, and one advantage is that it does not oxidise on exposure to air, and, further, it is fluid at the body temperature. This interesting sulphur compound is a stable pale greenish-yellow substance not affected by the air, and while it is powerfully antiseptic it is non-toxic.

(1) HECTINE; (2) HECTARGYRE.

(THE ANGLO-FRENCH DRUG COMPANY, LIMITED (BRESILLON), GAMAGE BUILDINGS, HOLBORN, LONDON, E.C.)

1. The chief claim about hectine is that it can be successfully employed as an antisyphilitic and is far less poisonous than other arsenical compounds such as salvarsan and atoxyl, while stated to be equally effective. Its constitution is conveyed in its chemical name benzo-sulphone-para-amino-phenyl-arsenate of soda. It is a white crystalline substance readily soluble in water, which was first tried in syphilis in French clinics. In the treatment of syphilis it has been used in doses of 20 centigrammes daily dissolved in one cubic centimetre of water injected into the gluteal muscle. According to the results obtained it shows powerful anti-syphilitic properties. It is claimed to be less risky in employment than salvarsan. 2. Hectargyre is a mercurial salt of hectine which appears to combine with advantage the antisyphilitic properties of both mercury and the organic arsenic compounds. It is stated to be free from the objectionable effects of ordinary mercurial compounds. It is employed in syphilis with advantage in all its stages.

COGNAC BRANDY.

(GAUTIER FRÈRES, COGNAC. LONDON AGENCY: BROWN, GORE AND CO., 40, TRINITY-SQUARE, E.C.)

This liqueur brandy is described to be 20 years old, and we can well believe this since it possesses all the characteristics of a long-matured spirit. Further, the results of our analysis are consistent with those given by an old standard brandy produced in the Cognac district. The results of analysis were: Alcohol by volume, 46·59 per cent.; extractives, 1·10 per cent.; volatile acidity calculated as acetic acid, 0·03 per cent.; fixed acidity calculated as tartaric acid, 0·02 per cent.; mineral matter, *nil*. In regard to secondary products, the following were the results given in parts per 100,000 of absolute alcohol present: Aldehydes, 14·10; furfural, 2·10; ethers, 135. The flavour is unmistakably that of genuine brandy produced in the Charente district. It shows in particular a good etherial content, and there can be no question about its suitability for medicinal purposes.

STILL FRENCH MOSELLE.

(HATCH, MANSFIELD, AND CO., 47, PALL MALL, LONDON, S.W.)

We have been asked whether, from a medical point of view, the still French Moselles can be compared favourably with the German white wines. It has been customary on the part of many medical practitioners to recommend patients, in those cases where an alcoholic stimulant was deemed desirable, the German light wines, as showing a minimum of acidity, of sugar content and of alcoholic strength. The wine which was regarded as meeting these requirements was invariably a German white wine, but we find that the still French Moselles conform to the same standard remarkably closely. We append the analyses of two German white wines which are typical, and analyses also of three French still Moselles equally typical.

	German white wines.		French wines, still Moselles.		
	A	B	A	B	C
	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
Alcohol by volume	9·86	10·30	10·73	10·30	10·73
Extractives	2·28	1·95	1·55	2·00	2·30
Sugar	0·19	0·18	0·17	0·23	0·10
Tartaric acid	0·57	0·67	0·54	0·67	0·71
Acetic acid	0·16	0·15	0·07	0·09	0·01
Mineral matter	0·22	0·16	0·14	0·15	0·20

The prices of the French Moselles are respectively—A, 21*s.*; B, 25*s.*; and C, 30*s.* per dozen. It will be seen that as regards alcoholic strength the differences are inappreciable, but when we come to the French Moselles the extractives in some instances give lower results than is the case in the German white wines. Considering sugar, the French Moselles, excepting one specimen, contained less. As to fixed acidity represented in tartaric acid, there is very little difference between the two classes of wines, but when we consider the volatile acidity represented in acetic acid we find that the French Moselles are distinctly superior to the German white wines. This is an important point, since to some extent the soundness of a wine rests upon the amount of volatile acid which it contains. The less present the better, and the French still Moselles are practically free from volatile acids. It follows that where a light non-acid wine, practically also free from sugar, is desired the still French Moselles may be recommended, and they are in no way inferior æsthetically to the German white wine. We think, indeed, that the flavour of some of the still French Moselles is more attractive and elegant than that of many of the German wines.

MALTED MILK TABLETS.

(HORLICK'S MALTED MILK COMPANY, SLOUGH, BUCKS.)

These tablets are a convenient form of the well-known preparation, malted milk. According to our analysis, Horlick's malted milk has the following composition: Moisture, 4·00 per cent.; total sugars, maltose and lactose, 52·83 per cent.; dextrin, 18·30 per cent.; protein, 13·05 per cent.; fat, 7·92 per cent.; and mineral matter, 3·90 per cent. Malted milk is clearly a nourishing article and it has the attractive flavour of malt. The method of preparation has evidently a certain solvent effect upon some of the constituents, since no less than 88 per cent. of the preparation of this malted milk is soluble in water. The tablets afford a very convenient and reliable form of food (containing all classes of nutritive elements) for the man engaged in a campaign on land, on sea, or in the air. The tablets are packed in a convenient tin and their diameter is somewhere between the size of a sixpenny and threepenny piece, while they are about an eighth of an inch thick. They are intended particularly as an emergency ration for troops engaged on a forced march. They seem to us well adapted for the purpose.

NON-ALCOHOLIC BEER (THREE SHELLS BRAND).

(THE NEW BREWERY SYNDICATE, LIMITED, 47, PALL MALL, LONDON, S.W.)

According to our analysis the claims in regard to this beer are well substantiated. It contains an amount of alcohol so low as to exempt it from the category of alcoholic beverages. The total amount of alcohol present in terms of proof spirit was just short of the limit laid down for temperance beverages—namely, 2 per cent. It is not often that beverages of this character can be said to be palatable, but this beer is a refreshing and attractive drink, delicately flavoured with hop, and evincing an unmistakable and pleasant malt flavour. Though brewed from malt and hops it contains very little extractive matters. The total amounted only to 1·10 per cent., while the sugar did not amount to more than 0·05 per cent., but this is balanced to some extent by the dextrin amounting to 0·87 per cent., including hop extractives. The acidity was inappreciable. The beer shows some nutritive properties, but we regard it favourably chiefly on account of its non-alcoholic and refreshing character and its delicate bitter flavour due to hops, and hops alone. There was present some salicylic acid, but in such small amount as to interfere in no degree with the wholesomeness of the beer. It is a genuine beer, and, as such, more interesting, we think, than most aerated drinks classed generally as non-alcoholic beverages.

THE LANCET.

LONDON: SATURDAY, APRIL 1, 1916.

The Enrolment of the Medical Profession.

THE conferences of representatives of the Local Medical War Committees which were arranged by the Central Medical War Committee to take place last week should, we think, have a distinctly valuable outcome, and the medical profession owes a debt of gratitude to the British Medical Association for having arranged (and paid for) a very practical method of dissipating some of the doubts and relieving some of the difficulties attendant upon the enrolling of the medical profession for military service. We published brief notes last week on the proceedings of the conferences at Leeds and London. This week we publish notes on those at Birmingham and Bristol, and the same general lesson may be drawn from the proceedings at all four gatherings—confidence in the policy and actions of the Central Medical War Committee has been promoted by a discussion of vexed questions. The widespread anxiety lest the Central Committee should override the judgment of Local Committees in the selection of names has also been allayed. It has in this way become obvious to audiences, who are themselves representative of these Local Committees, and therefore of the greater number of medical men concerned, that no alternative presents itself to voluntary enrolment save compulsion, in the event of the military authorities demanding further recruits from the medical profession. A stratum of the profession has now been reached, as Dr. ALFRED COX reminded the representatives of the Local Medical War Committees at the conference in Leeds, where great hardship may be experienced by the interchange of civil for military work, and the chances that those hardships, being intelligently recognised, will be removed as far as possible are greater, we think, under a system of voluntary enrolment than under one of compulsion, assuming that enrolment is effected by the bulk of those concerned.

The Central Medical War Committee has never concealed either from itself or from the constituency that the work of enrolment undertaken by the Committee is delicate in the extreme; the members of the Committee, or the majority of them, quite probably share the opinion which was expressed in this journal as soon as the overwhelmingly serious nature of the war was recognised, that a conscription of the medical profession would have given a fairer result. But the time has gone by when conscription can possess the virtues that it would have possessed originally, and although many members of the medical profession at the different conferences, notably at the gatherings in Birmingham and London, expressed a preference even at this date for compulsory enrolment, we think that the voluntary enrolment scheme is preferable if the difficulties in carrying it through are met fairly and squarely. A compulsory scheme applicable only to the medical profession has been deemed impossible, and other difficulties have never been made light of by any who understand the real situation of affairs, but the work of the Central Medical War Committee has not been rendered easier by masses of criticism, some of which may have been perfectly legitimate, but some of which has been ill-inspired, and some has had a suspect origin. The following train of thought is, for example, rather tortuous:—(1) The Army Medical Staff declares that a large number of officers are required in the Royal Army Medical Corps to meet growing armies and to make good depletions; (2) but the Army Medical Staff cannot know what is required because it has never consulted its Advisory Board; (3) therefore, when the Central Medical War Committee states that more medical men are and will be wanted for commissions in the Royal Army Medical Corps the Committee is misleading the medical profession. Yet that is a fair summary of the kind of way in which the work of the Committee and the behaviour of the Army Medical Staff have been criticised in letters to lay journals and in questions addressed in the House of Commons to the Under Secretary of State for War. There have been variants in the pattern of the argument, according as to whether the critic has been chiefly concerned in acclaiming the immorality of neglecting the Advisory Board, or in finding fault with the constitution of the Central Medical War Committee, or in criticising the way in which the officers of the Royal Army Medical Corps are employed when they have been recruited; but the assumption that there has been a great deal of mismanagement by everybody has been made so persistently that those who do not know the facts may have been impressed.

But lately the public has become aware of the unsubstantiality of the strictures; some of the complainants have been proved to be wrong in their facts, and others to have erred in their deductions, while a third class have come under strong suspicion of being inspired in what they have said, not so much by a desire to help in public affairs as by an itch to damage those at whose hands they believe themselves to have suffered material damage or personal slight. Categorical stories of lamentable breakdowns have been shown to be incorrect. Clear reasons for much of the plan adopted in the organisation of the Royal Army Medical Corps have been given. A story of an extraordinarily fine bill of health in an army of unprecedented numbers makes an absolute reply to those who consider that in the absence of an Advisory Board the authorities of the Army Medical Staff did nothing, or did only that which was wrong. The medical profession has already made great sacrifices with splendid results. Its members are being asked to meet a further demand on their services which many of them can ill meet. This is fully recognised. But if all show readiness to bear the burden, the weight should fall on the shoulders fittest to carry it. And it has now been definitely stated that unless a large proportion of the remaining available medical men under 45 enrol, the scheme of the Central Medical War Committee will not be proceeded with. That Committee is now reinforced by the formation of an Advisory Committee of the Royal College of Physicians of London and the Royal College of Surgeons of England, who will assist in the task of selecting the officers for the Royal Army Medical Corps.

Prescribing of Narcotic Drugs in the United States of America.

A YEAR ago particulars were given in THE LANCET[1] of the provisions of a measure, known as the Harrison Antinarcotic Law, to control the prescribing and selling of narcotic drugs which had just come into operation in the United States. The restrictions imposed by this Act were more severe than the regulations designed for the same purpose in any other country, and it was feared in some quarters that strict administration of the new law would be accompanied by such a large growth in the clandestine traffic in these drugs as would defeat the object with which the Act was promulgated. A year's experience, however, has demonstrated not only that the Act was capable of smooth administration, but that during the period in which it has been in force there has been no sensible increase in the smuggling of the class of drugs which the Act was designed to control. Some of the larger wholesale dealers in drugs are quoted as saying that their sales of drugs of this kind have been reduced by 70 to 80 per cent., and retail traders generally seem to be agreed that the amounts supplied to the public have been materially restricted. If then it is possible in a vast country like the United States, with its immense population, to limit the distribution of opium, morphine, and cocaine to the quantities required for legitimate medicinal purposes, how much more simple would it be to control the traffic in our own country.

One of the requirements of the American Act is that every person who prescribes or sells certain narcotic drugs shall be registered for that purpose and pay an annual registration fee of $1. This in itself is a considerable matter, since it affects something like a quarter of a million persons; an official report of the first year's administration shows that there have been registered in pursuance of the Act 140,000 medical practitioners, 42,000 dentists, 1100 veterinary surgeons, 48,000 druggists, and 400 manufacturing druggists. But the provisions of the measure do not stop at registration, this only being a means of keeping under supervision all the channels through which the narcotics are distributed. Pharmacists can only obtain supplies by ordering them on official forms, and they can only supply the drugs to medical practitioners who write their orders on similar forms. Prescriptions, which must bear the patient's name and address, can be only for a definite quantity, and have to be signed with the full name of the prescriber, whose address and registered number will also appear on the prescription. The pharmacist who dispenses the prescription is required to keep it for two years, and is prohibited under penalty from repeating the medicine except on the order of a fresh prescription. Although at times the observance of these precautions might occasion inconvenience, there has apparently been no noteworthy complaint, and the authorities acknowledge that they have received the ungrudging assistance of the medical profession in their attempt to stop the abuse of narcotic drugs. As must always happen when customs are suddenly altered, there have been cases of infringement due to negligence or want of comprehension of the regulations, and presumably there always will be occasional offences; but on the whole the Act has been well observed. The number of convictions that have been registered is 314, and a fair idea of the strict manner in which the Act is being enforced can be obtained from the fact that a registered person was fined for selling cocaine to a duly qualified medical practitioner whom he understood to be registered under the Act but was not, the court holding that the plea that the seller had good reason to believe that the purchaser was entitled to buy cocaine was worthless.

At present the provisions of the Act do not apply to preparations which contain only 2 grains of opium or ½ grain of morphine, or to preparations for external use which contain opium; but the authorities are considering the desirability of cancelling these exemptions, since they hold the view that the uncontrolled sale of even such preparations might serve to negative the good results to be expected from effectual enforcement of the new law. It is common knowledge that the opium, morphine, and cocaine habits had reached alarming proportions in the United States before this measure came into force, and since there is no evidence that the abuse of narcotic drugs in this country exists to any disturbing extent it is perhaps doubtful whether there is a need for the adoption of such stringent measures of repression in Great Britain. But the United States Legislature in enacting this law considered that they were bound to do so in order to carry out treaty obligations entered into by the States, in common with other governments; and if other parties to the treaty take as high a view of their obligations as do the United States, we may witness the enactment of replicas of this stringent law in many of the civilised countries of the world, when such time arrives as the nations have leisure to think of domestic legislation.

[1] THE LANCET, March 27th, 1915.

Annotations.

"Ne quid nimis."

MEDICAL DISEASES IN THE NEAR EAST.

AN official booklet has just been issued[1] containing in handy form memoranda on some of the diseases likely to be met with in the Near East, as well as some notes on sanitation. The diseases are arranged in alphabetical order, and under each are headings dealing with etiology, symptoms, prognosis, complications, diagnosis, differential diagnosis, prophylaxis, and treatment, with the addition in certain cases of a few lines on morbid anatomy. The booklet may therefore be regarded as a supplementary volume to a standard text-book of medicine containing the experience gained so far in the Near East brought carefully up to date. Although the chapters are anonymous, there is ample internal evidence that each has been written by an expert. To record their contents would be but to summarise what has appeared in the columns of our own and other professional journals during the last 18 months. Of special interest, however, are the short sentences relating to prevalence which commence each article. These might well be collected into a short preamble as follows:—

Cerebro-spinal fever: This disease has occurred at Salonica within recent years. In hot, dry, and sandy countries it is apt to appear in the season when dust-storms are prevalent.

Cholera: Happily at the time of writing no cases of cholera have been reported in the Mediterranean Expeditionary Force. With the advent of warm weather, however,

[1] Memoranda on Some Medical Diseases in the Mediterranean Area, with some Sanitary Notes. Wyman and Sons. 1916. Price 1s.

and the extension of the campaign to Bulgaria, it is more than likely that Asiatic cholera will appear in the war area.

Dengue: Occasionally breaks out in Egypt, has been reported from the Gallipoli Peninsula, probably visits the islands of the Ægean Sea, and is almost certainly found along the coasts of Greece, Bulgaria, and Turkey.

Diarrhœa: There were undoubtedly on the Gallipoli Peninsula and at Mudros many cases of acute diarrhœa unassociated with any form of dysentery or with flagellate infection.

Dysentery: Although happily the mortality caused by it has not been great, dysentery has been very prevalent amongst the troops serving in the Eastern Mediterranean area.

Malaria: A considerable number of cases of malaria, that most protean of all diseases, has occurred at Cape Helles and at Suvla Bay. Malaria is also endemic in and about Salonica.

Oriental sore, better known as cutaneous leishmaniasis, has occurred amongst the troops operating in Mesopotamia, and it is quite possible that cases may occur in the M.E.F., for the disease has been reported from Egypt, Arabia, Syria, Asia Minor, Turkey in Europe, and Greece.

Paratyphoid fever: Apart from dysentery and diarrhœa paratyphoid infections have undoubtedly accounted for most of the invalidings amongst men in the M.E.F. With the exception of troops which have served in India, B infections have been the more common, but there is no doubt that A infections have occurred in men who had been in contact with units from India.

Phlebotomus fever: This specific fever of short duration has a wide geographical distribution, and is known to occur in Egypt and on the Gallipoli Peninsula. It has especially affected the French at Cape Helles.

Plague: With the aggregation of ships in Eastern Mediterranean ports, the movement of Turkish and Russian troops from East to West, and the proximity of Egypt, plague may yet make its appearance in the war area.

Relapsing fever: So far there is no record of this disease having occurred among the troops of the Mediterranean Expeditionary Force, but with the extension of the campaign to the Balkans there is every likelihood that cases of what used to be called famine fever will occur. It has been recorded in the past from Salonica and Vodena.

Typhus fever: While there has been very little typhus fever amongst troops serving in the Mediterranean region, it may confidently be expected that the disease will be more in evidence throughout the winter and in the new area of hostilities.

Undulant fever is commonly known as Malta fever. It has a wide geographical distribution and has been known to occur throughout the eastern Mediterranean. Cases have cropped up amongst British troops operating in this area.

The list of diseases will be seen therefore to be a formidable one, and their prevalence in the Mediterranean area already considerable. But possibilities have been boldly faced, prophylactic measures carefully considered, and use made of the new preventive knowledge gained by recent experience, of which a digest is given in the chapters on Insect Pests and Sanitary Notes. The booklet will naturally form the vade-mecum of the Royal Army Medical Corps officer; but over and above this it will be impossible for any medical man within or without the Services to consider himself well informed without reading, marking, learning, and inwardly digesting this official handbook.

THE GALE AND A LESSON.

IT is many years since the elements have raged in this country with such fury as on the evening of March 28th, when a wind velocity of 47 miles an hour was recorded at Greenwich. Trees and telegraph posts were blown down all over the country, long-distance trains ceased to arrive at the London termini, and snow drifted in places many feet deep. Already several deaths are reported from being blown over in perilous situations, from various accidents, and from exposure on the hills. This list will probably be higher when messages again pass over the reinstated telegraph wires, and for every death from exposure scores will have suffered more or less permanently in health from the same cause. In nearly all cases where this happens the sufferer will be found to have been insufficiently or unsuitably clad. During the last 18 months millions of men have been clothed at the expense of the State in woollen garments of such texture and thickness that soaking should be impossible, and in footgear through which water percolates with difficulty. Under these conditions the conduction of heat away from the body seldom reaches a dangerous degree. It is surely time that the civilian population rendered themselves similarly immune to meteorological conditions in the winter and spring. It is a mistake to suppose that this requires heavy or thick clothing, it is largely a question of texture and uniformity. Now that fashion has relaxed her claims, the opportunity should be taken to discard paper shoes, gossamer stockings and blouses, and similar follies. When the claims are again heard, some at least will refuse to risk their lives for appearances that are often unsightly.

TORULA INFECTION IN MAN.

THE latest issued of the series of monographs from the Rockefeller Institute for Medical Research is concerned with a group of cases characterised by chronic lesions of the central nervous system, with clinical symptoms suggestive of cerebral tumour, produced by an organism belonging to the torula group. The authors of the monograph, Dr. James L. Stoddard and Dr. Elliott C. Cutler, of the Peter Bent Brigham Hospital at Boston, Mass., describe two cases in which the clinical symptoms indicated such signs of cerebral tumour as to lead to decompression or exploratory operation, but the pathological examination in each case proved the complete absence of tumour. Lesions were found, however, which fully explained the clinical symptoms and physical signs. Enormous numbers of organisms having many points of resemblance to those of blastomycosis occurred in all of the lesions in such a manner as to leave no doubt of their causal relations. The neurologist is familiar with cases to which the unsatisfactory diagnosis of pseudo-tumour has been attached, in which the accepted symptoms and signs of cerebral tumour—viz., headache, giddiness, vomiting, and optic neuritis, accompanied or not by more definite and even localising signs—are found at operation or at necropsy to have been caused by some totally distinct condition. Some reported cases, possibly incompletely examined, have remained more or less of a mystery. In the first of the two cases recorded in this monograph a woman aged 42 entered hospital on account of headaches, failing vision, giddiness, nausea and vomiting, diplopia, unsteady gait, difficulty in finding words, and disorientation. During the first two weeks of the illness the temperature ranged from 98° to 102° F. On examination double optic neuritis was present, a diagnosis of increased intracranial pressure, without localising signs, was made, and a right subtemporal decompression was practised. On incising the dura the brain appeared tense, and there was excess of fluid in the subdural and subarachnoid spaces. The patient died some ten days later after developing pneumonia and relapsing into a stuporose condition. At the necropsy a subacute or chronic meningo-encephalitis was found, with multiple foci of infection in the cerebellum, cerebral cortex, and basal ganglia. Microscopically enormous numbers of spherical organisms, of varying size, with a definite wall, were everywhere found in the lesions. Neuroglial reaction was present in the immediate vicinity of the lesions, and there was slight diffuse degeneration of ganglion cells and

myelin sheaths. In regard to the lesions themselves, many revealed areas of necrosis or caseation, such as are seen in tuberculosis, and giant cells were noted in some numbers, with oval or spherical nuclei arranged peripherally or centrally. There can be no doubt in the writers' opinion that the organism is a torula, and the features of the case are analogous, clinically and pathologically, to those of cases collected from the literature. The symptomatology of these closely resembles the clinical picture of intracranial neoplasm. A chronic, slowly progressing inflammatory process, situated in such a way as to interfere with the passage of cerebro-spinal fluid and occasion internal hydrocephalus, or leading to the formation of masses of parasites in various parts of the cerebrum or cerebellum, results in the development of symptoms of raised intracranial tension which it may be impossible to distinguish from the pressure effects of a brain tumour. There are similarities also, as is apparent, with other chronic infective conditions of the central nervous system, such as syphilis. A considerable portion of the monograph is taken up with a valuable investigation into and differential classification of the diseases formerly called blastomycosis. As a result of much personal experimental research, succinctly summarised in the monograph, the authors publish an elaborate table of differential points between torula infection, oidiomycosis (usually termed blastomycosis), and coccidioidal granuloma. In the general discussion which concludes the paper reference is made to the fact that torulæ were proved years ago by several observers to have marked pathogenic action in animals, with frequent production of brain lesions. How common this type of infection is in man is unknown, but many facts indicate the possibility of its being frequently present without recognition. The organism is probably not always very pathogenic in man, and lesions may be recovered from. In the healed stage the lesions are those of a slightly atypical tuberculosis, and the condition may thus be passed over. Experimental lesions in animals are sometimes quite indistinguishable from miliary tubercles without caseation. The general conclusions of a suggestive and valuable piece of work are that the factors which will aid the recognition of torula infection consist of: Discovery of early lesions in internal organs before the parasite is destroyed; realisation of the finer points of difference from tuberculosis; complete microscopical brain examination; cultures, especially on carbohydrate media at room temperature; and injections of fluids and cultures into white rats intraperitoneally, with microscopical examination especially of the brain.

EFFECT OF FATIGUE ON GASTRO-INTESTINAL ACTIVITY.

Dr. Ludwig Kast, of New York, has investigated the effects of fatigue on 54 patients and healthy subjects to test the motor power of the stomach and intestines. The stomach-pump and X rays were employed; to determine the time of elimination of the intestinal contents carmine was used, a standard test diet being given for a number of days. By taking the average, it was determined how long it took the stomach, and separately, how long it took the intestines, to propel the given amount of food. During the period of the tests the amount of physical activity was regulated and the mental activity approximately limited. Without any change of diet or of mental activity, the physical activity was markedly increased or decreased, and the effects of the same upon the evacuating power of the stomach or intestines observed. At other times, without change in the diet or the amount of physical exercise, the amount of mental efforts was markedly increased or decreased and the effects observed. It appears that the healthy individual showed very little variation as regards the evacuating power of the stomach or intestines as long as the physical exercise was not excessive. Mental efforts had no perceptible effect. In patients with moderate degree of atony and splanchnoptosis the evacuating power of the stomach and intestines decreased in direct proportion to the amount of mental and physical exertion. Physical exertion had the same effect in such individuals if the patient was kept in a horizontal position during these exercises and during the period of observation in order to eliminate the effect of splanchnoptosis in the erect position. In patients who clinically appeared susceptible to the effects of fatigue mental exertion was more marked in its delaying effect than physical exertion.

RELATION OF HIGH ARTERIAL TENSION TO ALCOHOL.

MUCH difference of opinion exists as to the part played by alcohol in the causation of high arterial tension, arterio-sclerosis, and interstitial nephritis. After carefully studying the question Lancereaux, the well-known French clinician, stated that alcohol does not favour the production of arterio-sclerosis. At the Académie de Médecine of Paris M. Camille Lian has reported an interesting investigation which his position as surgeon to a Territorial regiment enabled him to make. With the Pachon-Lian sphygmometer he took the blood pressures in the afternoon of 150 men, all aged 42 or 43 years. Without consulting the results he investigated their habits as to alcohol and divided them into four classes: 1. Sober, those who took less than a litre of wine daily and no spirits. (A litre of cider or beer was considered equivalent to half a litre of wine.) 2. Medium drinkers, those who took 1 to 1½ litres of wine daily and no spirits. 3. Great drinkers, those who took 2 to 2½ litres of wine or a smaller quantity and one or two *apéritifs* or *petits verres*. 4. Very great drinkers, those who took at least 3 litres of wine or a smaller quantity and four to six *apéritifs* or *petits verres*. The number of each group in whom the blood pressure was above normal—that is, the maximum pressure above 15 cm. of mercury and the minimum above 10—was then noted. The results were as follows: Sober, 16 men, blood pressure above normal 1 (6·25 per cent.); medium drinkers, 53 men, blood pressures above normal 4 (7·5 per cent.); great drinkers, 57 men, blood pressures above normal 10 (17·5 per cent.); very great drinkers, 24 men, blood pressures above normal 6 (25 per cent.). The greater frequency of high blood pressure as the consumption of alcohol increased showed that this substance was an important factor in causation. It might be objected that the increased pressure may have been due to other causes. But in such a number of subjects it was to be expected that these causes would be distributed without marked difference amongst the various groups. Moreover, the men were examined for stigmata of syphilis and questioned as to other infections and intoxications. After eliminating the cases in which another factor could have been in play it was found that the percentages of high pressure in the four groups were not sensibly altered.

HEALTH OF THE POST OFFICE STAFF.

IN his report for the year 1914–15 the Postmaster-General states that the health of the staff has again been satisfactory. The average sick-rate of the established staff during the year ended Dec. 31st, 1914, was 7·5 days for men and 11 days for women, and of the unestablished staff 4·8 days for men and 5·7 for women. The deaths through causes other than war recorded through the year show an annual death-rate of 3·3 per 1000 for men and 1·2 for women on the established staff. Of the 319 men who died the average age on death was 41, and the average length of service 17 years. Of the 38 women who died the average age was 32 and the length of service 10 years. 680 men and 161 women retired on account of ill-health at an average age in the case of men of 46, and in the case of women 35, the average length of service being in the case of men 24 years, and in the case of women 15 years. In 1912 the proportion of deaths and retirements from tuberculous diseases to deaths from all causes and retirements from ill-health in the Post Office was 14·5 per cent.: it appears from the Registrar-General's annual return for 1912 that in the case of persons in the United Kingdom between the ages of 15 and 65 the proportion of deaths from tuberculous diseases to deaths from all causes was 20·7 per cent. In 72 per cent. of the cases of tuberculosis occurring during 1914 there was a history either of previous tuberculous disease in the family or of previous illness predisposing to tuberculosis in the patient. The number of fresh cases arising in 1914 showed a substantial decrease as compared with those of the foregoing year. Every facility is granted to Post Office servants suffering from tuberculosis to obtain sanatorium treatment where a reasonable probability of recovery exists. Of the cases occurring during 1914, which were completed before the end of the year, about 35 per cent. of those who received sanatorium treatment were able to resume duty as compared with 16 per cent. in the case of those who did not receive such treatment. An examination of the cases of neurasthenia occurring during 1914 showed that in the majority of cases the disease was attributable to physical causes or to domestic troubles.

THE OPERATIVE TREATMENT OF OSTEO-ARTHRITIS.

THE main cause of the disability met with in cases of osteo-arthritis is the lipping of the edges of the articular surfaces of the bones entering into the affected joints. From time to time surgeons have removed one or more nodules of bone from such joints, but it has been left for Mr. W. I. de C. Wheeler to perform a definite operation for the purpose of relieving the disability of sufferers from this disease. He operated, as mentioned in last week's issue of THE LANCET (p. 678), on a patient who had been crippled for seven years by osteo-arthritis. He removed all the newly formed bone from the left knee and from the right hip, with the result that the patient, who before the operation had been able to walk only with the help of crutches, no longer needed their assistance, and further walking caused no pain. Mr. Wheeler is to be congratulated on the success of his operation. Unfortunately, the report does not give the age of the patient, though we gather from his remarks that the patient had not passed middle age. Be this as it may, we consider that the operation can reasonably be tried in suitable cases, for the relief of pain and of the lack of mobility which osteo-arthritis entails is worth more than the little risk attending such an operation. On one point we disagree with Mr. Wheeler, and that is on the name chosen for his operation. He has called it cheilotomy, and this obviously means "cutting the lip," and the name, no doubt, refers to the removal of the lipping of the bones, but we would urge him to endeavour to find a more suitable appellation for the operation he has devised, for such a name as cheilotomy should be reserved for an operation on the lips.

DR. GIORGIO MENINI.

THE death occurred on March 6th of Giorgio Menini, perhaps the ablest pupil of Grocco in the Istituto di Studi Superiori at Florence. A brilliant academic career led up to his speedy promotion as "Libero Docente" in pathology and as director of the clinical laboratory of the Santa Maria Nuova Hospital. State hygiene was another field in which he showed exceptional proficiency, insomuch that the Government charged him, in that interest, with a special mission, first to the Island of Sardinia, and then, during the Balkan War, to Albania. Among the Mussulman population he soon became a general favourite, his work in sanitary rehabilitation winning their gratitude and their confidence, and overcoming the distrust with which Christian intervention is received, often resented, by the "Faithful." Throughout the whole Sanjacate of Berat the presence of "Menini Italiano" was not only a medical but a political force. Returning to his post in Florence, he showed signs of impaired health, but no inducement or friendly admonition could wean him from professional duty, beloved as he was by his students and in constant request as a consultant by an ever-increasing *clientèle*. Within the last few days his resisting power seemed to relax with ominous rapidity, and he died while not yet 40 years of age, leaving behind him a sense of loss in which the profession and the public participate hardly less than his colleagues and immediate friends.

AT the Royal Society of Medicine on Thursday, April 13th, at 5 P.M., Mr. J. E. R. McDonagh will open a discussion on the Rationale and Practice of Chemo-Therapy, to which leading chemists have been invited.

UNIVERSITY OF LONDON OFFICERS TRAINING CORPS.—The Military Education Committee which was appointed to deal with the administration of the University of London Contingent of the Officers Training Corps shows by its seventh annual report that on Dec. 31st, 1915, the establishment included a medical unit consisting of four sections of a field ambulance. The numerical strength of this unit is owing to war conditions not given, but during the training year ending Sept. 30th, 1915, the cadets numbered 415, of whom 95 proceeded to commissions. During the year the following officers joined the medical unit: Major G. E. Gask, Captain W. Gilliatt, Captain R. D. Maxwell, Lieutenant J. H. Ryffel, and Second-Lieutenant A. Rodd. In an appendix to the report the list of former officers of the University who have fallen in the war includes the name of Captain G. C. McKay Mathison, A.A.M.C., and in the list of former cadets who have been killed are the names of R. Fazan, F. E. Harger, T. S. Lukis, M. Pern, and W. R. Pryn. As a consequence of the Military Service Act the Officers Training Corps of the University of London is now open only to students and other persons desirous of training for commissions who are under the age of 19 years. Application for enrolment should be made to the Adjutant, 46, Russell-square, W.C.

FOOD ECONOMICS IN RELATION TO THE WAR.

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II.[1]

Foods the Home-supply of Which it is Most Desirable to Amplify.

BESIDES wheat, which the Government is wisely encouraging the farmers to grow more of, we should seek to increase the output of peas and potatoes. These all possess the double virtue of being highly nutritious and admitting of long storage. Peas, which contain a high percentage of protein, are almost as nutritious in the dried state as when fresh. There would be no difficulty in increasing their output enormously. In 1913 the acreage of peas was only 161,121, as against 1,184,857 of potatoes and 3,983,448 of oats.

The subject of market-gardening requires careful consideration. Green vegetables are essential and a modicum of fruit is desirable, but the cultivation in large quantities of such vegetables as asparagus and tomatoes, and such fruits as grapes and strawberries, should not be encouraged. It entails too much money and labour, and is only justifiable where there has already been an initial outlay upon them. The question whether acorns, beech-nuts, and horse-chestnuts might be used for human food is worth considering. An agreeable flour can be made from acorns by maceration and subsequent drying and grinding, as has long been known to the Californians and other primitive peoples. In any case, all the available acorns should be gathered, for they are a valuable food for pigs and sheep. Horse-chestnuts can be made into a suitable food for animals. Like acorns, they contain some 40 per cent. of oil, and yet thousands of tons of these valuable seeds have recently been allowed to rot.

Coming now to live stock, the breeding of pigs should certainly be encouraged, and I see no reason why we should not have as large a proportion of these animals as Germany has. During the last 40 years the stock of pigs in that country has been increased from 7,000,000 to 20,000,000, while in England the number has recently fallen by nearly a million, and now totals little more than 3,000,000. Our annual expenditure on imported bacon, ham, pork, and lard amounts to about £27,000,000 sterling. Pig-farming has the advantage over sheep and cattle-farming in that the pig needs little more ground than the stye it occupies, although, of course, it uses up the products of the soil, notably in the shape of barley-meal, which, unfortunately, at the present time is considerably above the normal price. An immense amount of food suitable for pigs, which should go to the swill-tub, is lost in this country, owing to the lack of organised methods of collecting it in the towns. One of the special virtues of the flesh of the pig is that it lends itself so well to the processes of curing, and can be so conveniently stored.

Dairy-farming should be encouraged chiefly for the purpose of increasing the home-supply of butter and cheese, which we annually import to the value of about £24,000,000 and £7,000,000 sterling respectively.

Poultry-farming has met with little success in this country. Nevertheless it should be developed, chiefly, I think, with the object of increasing the output of eggs, which we import to the value of some £9,000,000 sterling annually. Eggs admit of ready storage. The chief expense of poultry-farming lies in the large quantity of corn required, but while it is economical to convert corn into eggs it is doubtfully economical to turn it into mature chicken fit for the table. I therefore suggest that the young cockerels should be killed off early, say when they reach the size of a partridge, at which stage they furnish the acceptable dish known as *poussin*.

It is hardly necessary to say that pheasant rearing is, from the point of view of food economy, highly wasteful, and only justifiable on a very limited scale.

Food Consumption.

It is our clear duty at the present time to exercise rigid economy in the matter of food consumption. By reducing the expenditure on food by £1 yearly per head (i.e., less than ¾*d.* a day and rather more than 4½*d.* a week) we should effect an annual saving of more than £45,000,000—i.e., an amount more than sufficient to pay the interest at 4½ per cent. on a loan of £1,000,000,000 sterling. I believe that by properly regulating the kind and quantity of food consumed and by minimising wastage such a saving is possible, and this not only without any sacrifice of the national health but with an actual improvement of it. Great economy could also be effected by reducing the consumption of alcohol. In 1915 the national drink bill was something more than £164,000,000. It is true that much of this huge sum goes back to the country as duty, but more than three-fourths of it represents a dead loss of wealth. To advise the nation to save this great sum is, I fear, a counsel of perfection. Nevertheless it would be a grand thing if we could rise to the occasion and all agree to abstain from alcoholic drinks during the period of the war. In this way we should, at a stroke, save the consumption of the thousands of tons of grain (70,000,000 bushels annually) employed in the manufacture of beer and spirits, divert a vast amount of energy now employed in brewery, distillery, and drink shop into more profitable channels, and improve the health and raise the morale of the nation.

There are at least four ways of reducing the consumption of food: (1) By preparing the food in the most economical way; (2) by minimising waste; (3) by selecting the right kinds of food and in the right proportions; and (4) by limiting to a sufficiency the quantity of food consumed. It is clearly of the utmost importance to prepare food in the most economical way and to prevent unnecessary waste. The best means of effecting these ends are receiving considerable attention just now, and there is no need for me to deal with this subject. Considerable economy may be effected by choosing the right kinds of food and taking them in the right proportions. In order to reduce to a minimum the amount of food required, the protein, saccharide,[2] and fat need to be proportioned somewhat as follows: fat, 1; protein, 2·5; saccharide, 10. If the food consists chiefly of bread and potatoes, then in order to provide the necessary quantity of protein an excess of saccharide has to be consumed. If, again, it is mainly of the animal variety, the needful supply of saccharide can only be obtained at the expense of an excess of protein. The most common error in this country in apportioning these three great classes of foodstuffs is to

[1] Article No. I. was published in THE LANCET of March 25th, p. 686.

[2] By *saccharide* I mean *carbohydrate*.

consume an excess of saccharide in the shape of bread, puddings, potatoes, and sugar, and too little fat. This is especially the case with the poor.

Man a Mixed Feeder.

The question how far man is adapted for animal and how far for vegetable food is one on which the public should be correctly informed. Man is neither purely carnivorous nor purely vegetarian: he is a mixed feeder. Some contend that he is by nature purely vegetarian, and that a strict vegetarian diet is more conducive to health than a mixed, and a vegetarian enthusiast has recently suggested that the present would be a good time for the nation to exclude animal food altogether, on the ground that the food production of this country could be greatly increased if the farmer ceased to breed cattle, sheep, and pigs, and devoted himself exclusively to the cultivation of vegetable food—above all, of the cereals. While admitting that every effort should at once be made to increase the home supply of wheat, we must be careful to avoid the sentimental error of supposing that man is by nature strictly vegetarian, no matter how anxious we may be to adopt a diet which does not involve the rearing of animals for slaughter. The fact is, as I have elsewhere endeavoured to show,[3] it was by virtue of persistent slaughter, continued through many thousands of centuries, that man evolved from the ape—that he grew into a being endowed with speech and reason and with aspirations beyond the grave. I have no doubt that it was the attraction of animal food which led the prehuman ape to abandon the forest for the plains, and that the conditions entailed by hunting were the chief factors in determining his evolution into man.

Other factors also operated. Intertribal warfare was, I believe, one of these, and I mention it here because it bears upon a question of burning interest at the present time—the influence of warfare on evolution. All are agreed that whatever influence modern warfare may have in bracing up and stimulating a nation to meet difficulties, it has a disastrous effect eugenically, seeing that it causes an elimination of the physically fittest, and in a country like our own, which adopts the voluntary system, of the bravest, most spirited, and most conscientious—in short, of those with the most grit. A strong argument, by the way, against a strictly voluntary system. While, however, modern warfare is a grave hindrance to evolution, I believe that primitive warfare played a not inconsiderable part in furthering it, notably in the psychic sphere, for it was a warfare of tribe against tribe, and its general effect was to cause a survival of the most brainy, most courageous, and most energetic tribes at the expense of their less gifted antagonists. This process continuing through many thousands of years, must have led to a steady evolution of the qualities which secured victory. This is a further illustration of my contention that man has evolved through slaughter. Strange, indeed, it is that he—the roof and crown of things—should have fought his way upward by bloodshed, and that from the standpoint of evolution modern warfare should have an effect the exact opposite of the old-time warfare of tribe against tribe.

Let us now consider the various types of animal and vegetable food consumed in this country.

[3] Man's Mental Evolution, Past and Future, THE LANCET, May 3rd (p. 1260), 10th (p. 1331), 17th (p. 1408), and 24th (p. 1473), 1913.

Animal Foods.

The following are our chief animal foods:—Beef, veal, milk (cheese, butter), mutton, lamb; pork (lard), bacon, ham; rabbit, game; poultry, eggs; fish. The value in millions sterling of imported animal food for the year 1913 was as follows:—Bacon and ham, 20·4; beef, 16·1; mutton, 10·9; pork, 1·6; butter, 24·3; cheese, 7·4; eggs, 9·5; fish, 4·8; lard, 5·5; margarine, 0·39. Of the various kinds of animal food rabbit and fish are the most economical, meat the most expensive. It occurs to me that a considerable wastage of fish might be prevented if more of it were smoked, salted, or otherwise cured. Surely no particle of edible fish should be thrown away. Those who are not risking their lives at the front must learn not to be over fastidious about their food. The importance of reducing the consumption of meat is generally acknowledged. It is well to remember that dislike of fat may lead to considerable waste by increasing the scraps left on the plate. A person who dislikes mutton fat, for instance, may not extract from a mutton chop one half its nutrient value. Such wasteful meat eaters should before all others restrict their meat diet at the present time. Fat constitutes a most important item of our food, and none of it should be wasted. Nearly all who cannot eat the fat in a cut off a joint relish dripping in cakes or simply spread on bread, as well as beef suet in puddings. In the case of families thus inclined as much of the fat of the meat as possible should be used as dripping or suet. This is important because the dietary of many people, notably children, is apt to be deficient in fat. One of the virtues of the flesh of the pig is the large amount of fat it contains. Many who cannot eat fat meat relish fat ham and bacon and lard worked up in cakes.

Milk.—It is very generally but erroneously believed that the child, as distinguished from the babe, needs milk and would suffer greatly if the supply of dairy milk suddenly failed. As a matter of fact, dairy milk has injured children far more than it has profited them. Milk, affording as it does a peculiarly favourable soil for the growth of disease germs, has carried disease and death to hecatombs of children. Not only has it been the chief means of conveying tuberculosis to them, but it has further acted injuriously by favouring the consumption of soft, pappy foods, such as sops and milk puddings, on the evils of which I shall have occasion to dwell later. It goes without saying that the infant, like the young of other mammals, requires milk for the first period of its life, and that the proper milk for it is its own mother's. When this fails, as it sometimes does (mainly, however, owing to unhealthy upbringing), milk from some other mammal, such as the cow or goat, has to be substituted, and we must, I suppose, gratefully acknowledge the service which non-human milk has rendered in enabling us to rear infants artificially. But even in this sphere it has not proved an unmixed blessing, in that it affords an excuse to unwilling mothers not to nurse their infants and not to regulate their lives in a way calculated to develop the nursing function. While, however, the infant needs milk of some kind during the first nine or ten months of life, it does *not need any after that period.* It is strange how the belief to the contrary has arisen. Why should the young of man any more than the young of any other mammal require milk after it has left the breast? It is only since man first domesticated the cow and the goat,

and this from the point of view of his evolution was but as yesterday, that he has been supplied with any milk other than human, and it is absurd to suppose that before that time his health suffered from the lack of cow's or goat's milk. To this day many pre-agricultural tribes are without any. When Australia was discovered, and this was only a few hundred years ago, the natives had not cultivated one square foot of that great continent; their only domesticated animal was a half-wild dog, and not one of them had ever tasted any other milk than woman's. Nevertheless, they were a vigorous healthy race with magnificent teeth. I mention this latter fact because I have heard it seriously suggested that the lack of an adequate supply of dairy milk is the chief cause of bad teeth among the poor of this country.

My point is not that dairy milk is a useless food for man, but merely that it is not essential to him after the nursing period. Its chief value to the human race, so it seems to me, is as a source of butter and cheese, two highly concentrated and agreeable foods, admitting of prolonged storage: not only cheese but salt butter may be kept for many months. For both these articles we are largely dependent upon foreign supplies. In 1913 we imported butter to the value of £24,000,000, and cheese to the value of £7,000,000. Would it not be wise, during the period of the war at least, to reduce our consumption of milk to a minimum and to make as much butter and cheese as possible, especially the latter, on account of the large amount of protein it contains? Plain cheeses, such as Cheddar and Cheshire, should be made in preference to the richer kinds, such as Stilton, which serve rather as savouries than as sources of nutriment. Some milk is required for infants and invalids; some also may be reserved as a flavouring for tea. Save in the case of invalids the quantity used for cooking (e.g., for milk puddings, cabinet pudding, batter pudding, Yorkshire pudding, trifle, and blanc-mange) should be reduced to a minimum. Puddings made of flour and suet, such as suet dumplings, roly-poly, and fruit or meat puddings, boiled or steamed, are, if anything, more wholesome than those containing milk, butter, and eggs.

Vegetable Foods.

Our vegetable foods may be classified as follows:—The cereals: wheaten flour (macaroni, vermicelli, semolina), oatmeal, rice, maize. Starch: sago, tapioca, arrowroot. Sugar. Vegetables: cooked (potatoes, peas, greens, &c.), and uncooked (salads). Fruits: luscious (apples, strawberries, grapes, &c.) and nuts. Beverages: tea, coffee, cocoa.

The cereals.—Of the various cereals consumed in this country wheat (wheaten flour), oats (oatmeal), and rice occupy the first place. Oatmeal is the most nutritious, containing as it does even more protein than wheat and considerably more fat. Rice is the least nutritious of the three, and inasmuch as it is for the most part consumed in a soft or even pappy form which does not invite mastication, and is moreover wholly imported into this country, we could very well dispense with it. Oatmeal porridge is a valuable food, but like rice (as served in this country at least) it does not conduce to mastication. Further, it uses up a lot of milk which might be better employed for making cheese and butter. We should therefore take the precaution to chew our porridge carefully and to be sparing in our use of milk with it. Oatmeal biscuits constitute a valuable food, and favour efficient mastication. Wheat has a double advantage over other cereals—it has the most delicate flavour and contains a large amount of gluten. Consequently, wheaten flour, unlike the flour of other cereals, is readily kneadable and can therefore be made into bread, macaroni, vermicelli, pastry, and all sorts of puddings and cakes. At the present time we need to exercise the utmost economy in our use of wheaten flour, and it should be reserved almost entirely for making bread and boiled suet "crust" (suet pudding, fruit pudding, meat pudding). Plain home-made cake and plain biscuits may be made in moderation, and even plain pastry; but rich pastry and fancy cakes, and such articles as buns, scones, tea-cakes, all of which are abundantly displayed in our confectionery shops, should be abandoned.

Bread has been aptly described as the staff of life. A good hunch of crusty bread, thoroughly chewed, with butter and cheese or fat bacon, followed by a little raw fruit, such as an apple, constitutes an ideal meal. Not only does it provide the needful nutritive ingredients, but it gives the teeth and salivary glands ample work, and leaves the mouth in a "hygienic" state. We have heard a great deal lately of potato bread. This is quite a pleasant food and it is a good plan to make it of cooked potatoes which might otherwise be wasted.

Starch.—Tapioca, sago, and arrowroot virtually consist of pure starch. Seeing that they are all imported and that our cereal food and potatoes afford the necessary quantity of starch, we shall do well to dispense with them, although there is no harm in using arrowroot for invalids. Tapioca and sago, as well as rice, are largely employed for milk puddings—in this country far too largely. These puddings use up a lot of milk which should be reserved for butter and cheese, and they belong to the injurious class of pap foods on which our children are fed all too copiously—but more of this later.

Sugar.—In view of the fact that all the sugar consumed in this country is imported and has to be paid for in exports, it is very desirable that it should not now be consumed in unnecessary amount. Widespread misapprehension prevails as to the value of sugar as a food. The fact is that we could get on very well without any sugar at all. Primitive man had none but the limited quantity furnished by wild honey. Nowadays, by the cultivation of the sugar-cane and beetroot, our yearly supply runs into thousands of tons, and it is consumed by the inhabitants of this country in vastly greater quantities than was the case even a few generations back. Because sugar is so cheap and has a high "caloric" value it is supposed to be an economical food for the poor. This, as Dr. Sim Wallace points out, is a fallacy: "Every penny spent on sugar by the poor is from the point of view of nutrition simply wasted, inasmuch as the poor are by force of circumstances compelled to obtain the great bulk of their nourishment from cereals and potatoes, which contain a relative superfluity of saccharide material." And it should be remembered that starch enters the blood in much the same form as cane sugar—i.e., as a monosaccharide. Sweetstuff shops do an infinity of harm, for unless special precautions are taken—and they rarely, if ever, are—sweets are highly injurious to the teeth; we should be better off without them. In many parts of the country where war allowances abound the sale of sweets, as of many other unnecessary articles, has gone up enormously during the war.

All money spent on sweets is worse than wasted. None should be thus spent. The money saved in this way should be loaned to the State, and the tens of thousands of persons engaged in the sweet industry be transferred to occupations more profitable to the country. The surest way of economising in sugar is to put a heavy tax upon it. Our annual import of this article costs us some £22,000,000 sterling. One half of this could quite easily be saved.

It is true that sugar is useful for preserving purposes, but even here its consumption might with advantage be considerably reduced. From the point of view of nutriment jams are of little more value than sugar alone. Not only do they consist of some 75 per cent. of sugar, but most of the virtue of the fresh fruit is lost in the process of boiling. Moreover, while fresh fruit cleanses the mouth and teeth and thus promotes "oral hygiene," jams leave the mouth in an unhygienic state and tend to give rise to decay of the teeth.

Vegetables.—Practically all our vegetables are home-grown, and perhaps for this reason people are apt to be very wasteful with them. Special care should be taken not to waste the highly nutritious potato.

Fruits.—Provided there is an adequate supply of vegetables, fruit, though a useful adjunct to the dietary, could, if the necessity arose, be dispensed with entirely. Imported fruits, such as oranges, apples, bananas, figs, and dates, are not necessary. A question of some difficulty is how to deal with the excess of home-grown fruits (e.g., plums, apricots), which are highly perishable. It is not desirable to make large quantities of jam, for this would use up much sugar which, as we have seen, is not a necessary food. But fruit can be bottled by the use of no more than a dessert-spoonful of sugar to the pound, or even, I understand, without any sugar at all. The fruit is placed in a receptacle. This is filled up with water. It is then sterilised by heat for half an hour, and finally sealed hermetically by means of a screw top.

Tea, coffee, and cocoa.—These are unnecessary, and inasmuch as they are all imported they should be economised to the utmost. Tea and coffee are pure stimulants and have no actual nutritive value. In a time of stress we could do without them quite well. Cocoa, besides being slightly stimulant, is nutritious, but it is an expensive food.

(To be concluded.)

CANADA.

(FROM OUR OWN CORRESPONDENTS.)

Public Health Department needed in Canada.

Dr. Steele, M.P. for North Oxford, Ontario, introduced into the Canadian House of Commons recently a resolution calling for the immediate creation in the Canadian Government of a Department of Public Health. The need for such a department was greater now than it ever had been, and would be still greater as soon as the war is ended, Canadians anticipating an enormous immigration into the Dominion from European countries. At the present time health matters coming under the jurisdiction of the Federal Government are administered from eight or ten different departments of the public service. The object would be to consolidate these under one responsible Minister of the Crown. It is claimed that 40 per cent. of Canada's infant mortality could be saved were there a properly constituted department of health to look after such matters. The Canadian Medical Association appointed a special committee as long ago as 1901 on this very subject, and year after year the matter has been urged upon the Government at Ottawa, but no step has been made forward in the 15 years.

Health and Hygiene in Montreal.

During the year 1915 a series of conferences was held in Montreal under the auspices of the Department of Health in connexion with the campaign against tuberculosis and infant mortality. In all 147 lectures were given and the average attendance was over 200. The Health Department has decided to continue these conferences during 1916. In the month of January another new public bath was opened in the city, making a total of 14 baths now under municipal direction. These are available to women upon certain days of the week.

The Care of the Feeble-Minded.

In January a meeting was held in Toronto to discuss the care of the feeble-minded in Canada, on the basis of the report of the Special Commission of the Ontario Government. The statistics presented proved the great prevalence of feeble-mindedness throughout the Dominion, and the report suggested remedies, including classes for backward children in the public schools, suitable institutions for the education of the worst cases, compilations by the medical officer of health of a register of defectives, a psycho-educational clinic, a farm cottage system, the appointment of a permanent board whose membership might include the Provincial Secretary, the Minister of Education, and the Lieutenant-Governor of the province. The increase of the feeble-minded in Canada is a serious matter, which must continue to claim the attention of the provincial governments.

Military Hygiene in Victoria, B.C.

A regiment of fine men, hunters, lumbermen, and the like, is quartered at Victoria in a drill-hall which, as anyone with any expert knowledge of such things can see, is most unsuitable for a barrack, with its small amount of window area per man. Further, it is dusty and overcrowded. The sick-list is said to be very high, and two men have died of pneumonia after measles. The officers of the regiment, medical and lay, are reported to be in protest unavailingly, and recruiting is being pushed also to replace the men who have died, men who, it is thought, need not have been lost had the request of the commanding officer been granted for leave to put his regiment under canvas. This case requires to be very quickly dealt with by the authorities, for it was under just such conditions that in the "fifties" of last century the British Guards used to lose so many men from phthisis. Nowadays more is known of barrack hygiene, and consumption is kept down by avoiding overcrowding.

March 4th.

NOTES FROM INDIA.

(FROM OUR OWN CORRESPONDENTS.)

Plague and Rat Destruction.

THE plague deaths in India during the week ending Jan. 29th numbered 6620 against 8533 cases. The Bombay Presidency and Sind had 1772 deaths, the Madras Presidency 366 Bihar and Orissa 582, the United Provinces 1239, the Punjab 40, Burma 347, the Central Provinces 778, Mysore State 130, Hyderabad State 1271, Central India 81, and Kashmir 14. The smoking out of rats is being vigorously carried on throughout the Punjab, especially in those villages where plague was recently seen and where plague is again appearing. The work is now done by means of a bellows which blows the fumes from burning bhoosa and sulphur into the rat-holes. The smoke traverses from one house to another, and appears out of the holes in the walls and floors of houses adjacent. The effectiveness of this work is, however, sadly diminished by the customary difficulty of getting the villagers to combine for a common object. Thus, although the rats in the houses properly smoked out are really killed, those in the houses where objections were raised spread again through the village.

The Detection of Milk Adulteration.

A bulletin, No. 57, of the Pusa Research Institute, entitled "The Detection of Added Water in Milk in India," by Dr. J. W. Leather, the Imperial agricultural chemist, states that the usual English method for detection of added water

is practically useless in India. In England the total solids must not be less than 8·5 per cent., while in India a wider lim't is admissible, as there is no means of ascertaining the respective proportion of buffalo and cow's milk when mixed. Thus any fair standard for solids would be too high for cow's milk alone, and a standard even as high as 8·3 per cent. would still leave it open to the buffalo milk vendor to add from 10 to 20 per cent. of water without fear of detection. Dr. Leather describes two other methods for the detection of added water—the refractive index of the milk serum and the freezing-point of the milk. The former would hardly detect 10 per cent. of added water. The latter method he finds much more dependable, and by it the addition of even very small quantities of water are readily detected.

Small-pox Epidemic in Madras.

The existence of small-pox in an epidemic form in Madras is notified, and the health department of the Madras corporation is doing its best to grapple with the disease, which is said to have been introduced by the large influx of visitors during the Christmas holidays. Just now there are a large number of pilgrims from the north passing through Madras on their way to Rameswaram.

Plantain Juice as an Antidote for Snake-bite.

The *Times of Ceylon* reports that at Colombo, in the presence of a large gathering, including doctors, Mr. Donald Obeysekere demonstrated the efficacy of plantain juice as an antidote to snake-bite. Mr. Obeysekere liberated a cobra from a gunny-bag face to face with a valuable bull terrier, upon which the demonstrator's confidence in his remedy led him to experiment. The dog, however, broke the cobra's back after a ten minutes' fight, during which he had succeeded in avoiding its fangs. The bull terrier was then held off, and a village pi-dog was brought in and was severely bitten by the snake. It howled with pain and collapsed in a few minutes. The dog was then given plaintain juice freshly expressed from some young trees of no particular variety, and when about a breakfast-cup had been administered it is stated that the dog began to revive. Within half an hour it was on its feet, and the doctors present were satisfied that it had got over the effects of the poison. The journal adds that the experiment was then repeated with a cock, which was likewise bitten badly and recovered. Dr. Fabian Hirst, who was present, was asked to make further experiments, the result of which will be awaited with interest.

March 5th.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.[1]

IN the 96 English and Welsh towns with populations exceeding 50,000 persons at the last Census, 7859 births and 5722 deaths were registered during the week ended Saturday, March 25th. The annual rate of mortality in these towns, which had been 17·8, 17·2, and 17·9 per 1000 in the three preceding weeks, fell in the week under notice to 16·5 per 1000 of their aggregate population, estimated at 18,136,180 persons at the middle of the year 1914. During the first 12 weeks of the current quarter the mean annual death-rate in these towns averaged 15·6, or 0·4 per 1000 higher than that recorded in London The annual death-rate last week ranged from 4·3 in Enfield, 6·3 in Ilford, 6·6 in Eastbourne, 8·1 in Walthamstow, and 8·8 in Ealing, to 22·9 in Preston, 23·0 in Liverpool, 23·1 in Dewsbury, 25·5 in Tynemouth, 27·0 in Swansea, and 28·5 in Barrow-in-Furness.

The 5722 deaths from all causes were 493 fewer than the number in the previous week, and included 391 which were referred to the principal epidemic diseases, against 345 and 378 in the two preceding weeks. Of these 391 deaths, 137 resulted from whooping-cough, 115 from measles, 65 from infantile diarrhœal diseases, 53 from diphtheria, 12 from scarlet fever, and 9 from enteric fever, but not one from small-pox. The annual death-rate from these diseases was equal to 1·1 per 1000, and equalled that in the previous week. The deaths attributed to whooping-cough, which had been 114, 85, and 93 in the three preceding weeks, rose to 137, and caused the highest annual death-rates of 1·2 in Derby and in Stockport, 1·3 in Gateshead, 1·8 in Cambridge and in Stockton-on-Tees, and 2·1 in Warrington. The deaths referred to measles, which had increased from 62 to 127 in the seven preceding weeks, fell to 115; the highest death-rates from this disease were 2·0 in Grimsby, 2·9 in Newport (Mon.), 3·0 in Swansea, 3·4 in Tynemouth, 3·5 in Stockton-on-Tees, and 7·2 in Rochdale. The fatal cases of diarrhœa and enteritis (among infants under 2 years), which had been 65, 60, and 68 in the three preceding weeks, fell to 65, and included 14 in London, 7 in Birmingham, 5 in Manchester, and 3 in Liverpool. The deaths attributed to diphtheria, which had been 82, 54, and 61 in the three preceding weeks, fell to 53, of which 11 occurred in London, 5 in Birmingham, and 3 in Liverpool. The deaths referred to scarlet fever, which had been 17, 13, and 19 in the three preceding weeks, declined to 12, and included 2 in St. Helens. The 9 fatal cases of enteric fever, of which 2 were registered in Sheffield, were equal to the average in the earlier weeks of the quarter.

The number of scarlet fever patients in the Metropolitan Asylums Hospitals and the London Fever Hospital, which had declined from 2257 to 1839 in the nine preceding weeks, further fell to 1783 on Saturday last; 210 new cases were admitted during the week, against 234, 216, and 193 in the three preceding weeks. These hospitals also contained on Saturday last 1443 cases of diphtheria, 237 of whooping-cough, 120 of measles, and 49 of enteric fever, but not one of small-pox. The 1435 deaths from all causes in London were 166 fewer than in the previous week, and corresponded to an annual rate of 16·6 per 1000. The deaths referred to diseases of the respiratory system, which had been 373, 344, and 405 in the three preceding weeks, fell to 337 in the week under notice, and were 142 below the number registered in the corresponding week of last year.

Of the 5722 deaths from all causes in the 96 towns, 171 resulted from violence and 429 were the subject of coroners' inquests, while 1664 occurred in public institutions. The causes of 42, or 0·7 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest. All the causes of death were duly certified in London and in its 14 suburban districts, in Leeds, Bristol, Bradford, Hull, Newcastle-on-Tyne, and in 58 other smaller towns. Of the 42 uncertified causes, 11 were registered in Birmingham, 6 in Liverpool, 3 each in Manchester, and Tynemouth, and 2 each in St. Helens, Rochdale, Preston, Blackpool, and Darlington.

[1] The Scottish and Irish figures are not forthcoming owing to the delay in the mails.

VITAL STATISTICS OF LONDON DURING FEBRUARY, 1916.

In the accompanying table will be found summarised complete statistics relating to sickness and mortality in the City of London and in each of the metropolitan boroughs. With regard to the notified cases of infectious diseases, it appears that the number of persons reported to be suffering from one or other of the 10 diseases specified in the table was equal to an annual rate of 6·0 per 1000 of the population, estimated at 4,516,612 persons; in the three preceding months the rates had been 7·8, 6·3, and 6·5 per 1000 respectively. The lowest rates in the month were recorded in Kensington, Chelsea, the City of Westminster, St. Marylebone, and Hampstead; and the highest rates in Stoke Newington, Finsbury, Shoreditch, Bethnal Green, and Stepney. The prevalence of scarlet fever showed a further decline from that recorded in other recent months; this disease was proportionally most prevalent during the month in Holborn, Finsbury, Shoreditch, Bethnal Green, and Greenwich. The Metropolitan Asylums Hospitals contained 1956 scarlet fever patients at the end of the month, against 2896, 2431, and 2157 at the end of the three preceding months; the weekly admissions averaged 210, against 329, 248, and 249 in the three preceding months. Diphtheria was slightly more prevalent than it had been in the preceding month; among the several boroughs the greatest proportional prevalence of this disease was recorded in Stoke Newington, Stepney, Battersea, Wandsworth, and Camberwell. The number of diphtheria patients under treatment in the Metropolitan Asylums Hospitals, which had been 1551, 1476, and 1491 at the end of the three preceding months, had risen again to 1538 at the end of the month; the weekly admissions averaged 198, being 195, 177, and 198 in the three preceding months. The prevalence of enteric fever showed a slight increase; this disease was proportionally most prevalent in Paddington, Kensington, the City of Westminster, Poplar, Lambeth, and Wandsworth. There were 50 enteric fever patients under treatment in the Metropolitan Asylums Hospitals at the end of the month, against 57, 50, and 44 at the end of the three preceding months; the weekly admissions averaged 7, which was also the average in each of the three preceding months. Erysipelas was proportionally most prevalent in Paddington, Shoreditch, Bethnal Green, Poplar, and Woolwich. The 19 cases of puerperal fever notified during the month included 3 in Bethnal Green and 2 each in St. Pancras, Islington, and Lambeth. The 30 cases of cerebro-spinal meningitis included 4 in Kensington, 3 in Hackney, 3 in Shoreditch, 3 in Bermondsey, 2 in St. Pancras, and 2 in Finsbury; the 2 cases of poliomyelitis belonged to St. Pancras and Stepney respectively.

ANALYSIS OF SICKNESS AND MORTALITY STATISTICS IN LONDON DURING FEBRUARY, 1916.

(*Specially compiled for* THE LANCET.)

CITIES AND BOROUGHS.	Estimated population in the middle of 1914.	NOTIFIED CASES OF INFECTIOUS DISEASE.											DEATHS FROM PRINCIPAL INFECTIOUS DISEASES.								Deaths from all causes.	Death-rate per 1000 living.†
		Small-pox.	Scarlet fever.	Diphtheria.*	Typhus fever.	Enteric fever.	Other continued fevers.	Puerperal fever.	Erysipelas.	Cerebro-spinal meningitis.	Poliomyelitis.	Total.	Annual rate per 1000 persons living.	Small-pox.	Measles.	Scarlet fever.	Diphtheria.*	Whooping-cough.	Enteric fever.	Diarrhœa and enteritis (under 2 years).	Total.	Annual rate per 1000 persons living.		
LONDON...	4,516,612	—	883	841	—	41	4	19	245	30	2	2065	6·0	—	30	21	62	123	3	64	303	0·9	5023	14·5
West Districts.																								
Paddington	142,055	—	23	19	—	2	—	—	12	—	—	56	5·1	—	1	1	2	3	—	1	8	0·7	167	15·2
Kensington	170,817	—	17	14	—	3	—	—	9	4	—	47	3·6	—	—	—	1	—	—	4	5	0·4	184	13·9
Hammersmith	114,750	—	20	21	—	—	—	1	4	—	—	46	4·8	—	3	—	1	—	—	1	5	0·5	122	12·6
Fulham	158,849	—	19	30	—	—	—	1	5	—	—	55	4·5	—	—	—	2	2	—	—	4	0·3	147	12·5
Chelsea	63 791	—	6	10	—	1	—	1	1	1	—	20	4·1	—	—	—	2	4	—	2	8	1·6	82	16·0
City of Westminster ...	152,346	—	30	11	—	2	—	—	6	1	—	50	4·3	—	—	—	2	3	—	4	9	0·8	155	14·0
North Districts.																								
St. Marylebone	112,892	—	16	6	—	1	1	—	8	1	—	33	3·8	—	2	1	1	4	—	4	12	1·4	127	15·0
Hampstead	86,731	—	10	6	—	1	—	—	1	—	—	18	2·7	—	1	—	—	1	—	—	2	0·3	63	10·0
St. Pancras	212,497	—	59	40	—	1	—	2	6	2	1	111	6·8	—	1	2	2	4	1	2	12	0·7	271	16·6
Islington	324,764	—	68	38	—	2	—	2	8	1	—	119	4·8	—	—	4	4	6	1	2	17	0·7	387	15·1
Stoke Newington... ...	50,454	—	13	18	—	1	—	—	—	1	—	33	8·5	—	—	—	2	—	—	1	3	0·8	55	13·5
Hackney	223,724	—	25	46	—	2	—	1	16	3	—	93	5·4	—	2	—	3	7	—	1	13	0·8	234	13·7
Central Districts.																								
Holborn	45,861	—	14	8	—	—	—	—	2	—	—	24	6·8	—	—	—	—	1	—	—	1	0·3	44	12·5
Finsbury	83,212	—	26	20	—	1	—	—	6	2	—	55	8·6	—	4	2	2	—	—	2	10	1·6	120	18·6
City of London	17,129	—	3	3	—	—	—	1	—	1	—	8	6·1	—	—	—	—	—	—	—	—	—	23	18·2
East Districts.																								
Shoreditch	108,869	—	34	16	—	1	3	—	13	3	—	70	8·4	—	—	2	2	5	1	6	16	1·9	131	16·2
Bethnal Green	127,662	—	38	28	—	1	—	3	13	—	—	83	8·5	—	1	—	4	5	—	2	12	1·2	148	15·7
Stepney	273,265	—	62	84	—	3	—	1	16	—	1	167	8·0	—	3	2	2	19	—	3	29	1·4	336	16·7
Poplar	160,222	—	24	31	—	2	—	—	18	1	—	76	6·2	—	—	1	1	5	—	2	9	0·7	202	16·2
South Districts.																								
Southwark	186,941	—	40	40	—	1	—	1	10	1	—	93	6·5	—	1	—	4	9	—	5	19	1·3	224	15·7
Bermondsey	124,213	—	20	23	—	—	—	—	8	3	—	54	5·7	—	—	1	3	2	—	1	7	0·7	140	14·7
Lambeth	296,724	—	46	40	—	5	—	2	11	1	—	105	4·6	—	1	—	5	6	—	4	16	0·7	341	14·7
Battersea	167,338	—	37	50	—	1	—	1	9	1	—	99	7·7	—	2	2	2	4	—	5	15	1·2	170	13·3
Wandsworth	338,998	—	80	100	—	4	—	1	18	1	—	204	7·8	—	—	—	10	7	—	3	20	0·8	318	12·3
Camberwell	262,020	—	50	70	—	1	—	—	10	—	—	131	6·5	—	—	—	1	7	—	4	12	0·6	274	13·4
Deptford	109,182	—	22	12	—	1	—	—	8	—	—	43	5·1	—	5	—	—	4	—	2	11	1·3	143	16·9
Greenwich	96,037	—	26	16	—	1	—	1	3	—	—	47	6·4	—	3	2	1	5	—	1	12	1·6	122	16·3
Lewisham	172,433	—	30	15	—	2	—	—	10	1	—	58	4·4	—	—	—	2	5	—	2	9	0·7	148	11·0
Woolwich	122,836	—	25	26	—	1	—	—	14	1	—	67	7·1	—	—	1	1	5	—	—	7	0·7	145	15·8
Port of London	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

* Including membranous croup. † The death-rates are corrected for variations in sex and age constitution of the populations of the several boroughs, the population of England and Wales being taken as the standard.

The mortality statistics in the table relate to the deaths of persons actually belonging to the several boroughs, the deaths occurring in institutions having been distributed among the boroughs in which the deceased persons had previously resided; the death-rates from all causes are further corrected for variations in the sex and age constitution of the populations of the several boroughs. During the four weeks ending Feb. 26th the deaths of 5023 London residents were registered, equal to an annual death-rate of 14·5 per 1000; in the three preceding months the rates had been 16·2, 17·3, and 13·5 per 1000 respectively. The death-rates for the month ranged from 10·0 in Hampstead, 11·0 in Lewisham, 12·3 in Wandsworth, 12·5 in Fulham and in Holborn, and 12·6 in Hammersmith, to 16·6 in St. Pancras, 16·7 in Stepney, 16·9 in Deptford, 18·2 in the City of London, and 18·6 in Finsbury. The 5023 deaths from all causes included 303 which were referred to the principal infectious diseases; of these, 30 resulted from measles, 21 from scarlet fever, 62 from diphtheria, 123 from whooping-cough, 3 from enteric fever, and 64 from diarrhœa and enteritis among children under 2 years of age. No death from any of these diseases was recorded in the City of London; among the metropolitan boroughs they caused the lowest death-rates in Fulham, Kensington, Hampstead, and Holborn: and the highest rates in Chelsea, St. Marylebone, Finsbury, Shoreditch, Stepney, and Greenwich. The 30 cases of measles were equal to only one-seventh of the corrected average number in the corresponding period of the five preceding years, and included 5 in Deptford, 4 in Finsbury, 3 in Hammersmith, 3 in Stepney, and 3 in Greenwich. The 21 fatal cases of scarlet fever were 4 in excess of the average number, and included 4 in Islington and 2 each in St. Pancras, Finsbury, Shoreditch, Stepney, Battersea, and Greenwich. The 62 deaths from diphtheria were 12 more than the corrected average number; this disease was proportionally most fatal in Chelsea, Stoke Newington, Finsbury, Bethnal Green, Southwark, Bermondsey, and Wandsworth. The 123 deaths from whooping-cough were 17 above the corrected average, the highest death-rates from this disease being recorded in Chelsea, Shoreditch, Bethnal Green, Stepney, Southwark, Greenwich, and Woolwich. The 3 deaths from enteric fever were 10 below the corrected average number, and belonged to St. Pancras, Islington, and Shoreditch respectively. The mortality from diarrhœa and enteritis among children under 2 years of age was proportionally greatest in Chelsea, St. Marylebone, Shoreditch, Southwark, and Battersea. In conclusion, it may be stated that the aggregate mortality in London in February from the principal infectious diseases, excluding diarrhœa, was 39·1 per cent. below the average.

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

Surgeon J. H. Wright, Reserve List of Medical Officers, has been promoted to the rank of Staff Surgeon on the Reserve List of Medical Officers.

ARMY MEDICAL SERVICE.

Temporary Lieutenant-Colonel W. H. Willcox, R.A.M.C., to be temporary Colonel.

ROYAL ARMY MEDICAL CORPS.

Major J. Powell is restored to the establishment.

Major R. Jones, R.A.M.C. (T.F.), to be temporary Lieutenant-Colonel.

To be temporary Majors: G. D. Gray and Captain E. W. H. Groves, R.A.M.C. (T.F.).

Captain A. F. C. Martyn is seconded for service with the Egyptian Army.

E. W. Skinner to be temporary Captain.

The undermentioned temporary Lieutenants relinquish their commissions: O. Barton, N. Keith, J. A. Thoms, W. K. Hall, and E. N. Drier.

To be temporary Lieutenants: D. P. Thomas, A. G. Alexander, W. G. Harnett, A. J. Chillingworth, H. M. Harrison, R. A. Quinn, J. I. Enright, C. E. G. Bateman, J. G. T. Thomas, B. S. Simmonds, D. S. Graham, A. A. E. Newth, J. R. Wylie, H. W. Harding, J. Young, G. C. B. Hawes, A. E. Foerster, C. W. Morrison, W. J. Porteous, J. S. Annandale, A. J. D. Rowan, A. Morgan, W. G. Weston

J. St. J. Dundon, C. R. Howard, J. T. H. Madill, N. J. Judah, J. B. Yelf, J. F. Mackenzie, J. E. Manlove, C. O'Malley, S. C. W. Iredale, G. B. Mason, C. Townshend, C. L. Forde, P. A. McCallum, T. R. Davey, C. Costello, A. A. B. Scott, W. Scot, W. H. Soady, E. Nuttall, J. K. Bell, J. Cathcart, J. J. Dowdall, W. H. Thomas, W. J. Murphy, J. C. Anderson, R. C. Corbett, W. G. Thomas, E. B. Morley, J. F. Nicholson, R. B. Gorst, D. A. Crow, G. L. Lawlor, J. B. Fairclough, S. A. McClintock, A. H. Arnott, P. C. Conran, A. C. Lambert, R. E. McLaren, I. O'Keeffe, E. C. Lindsey, and R. V. Murphy.

Temporary Honorary Lieutenants to be temporary Lieutenants: S. R. Prall and W. Thomas.

Canadian Army Medical Corps: N. C. Wallace to be temporary Honorary Major. F. J. Ewing to be temporary Captain.

SPECIAL RESERVE OF OFFICERS.

Royal Army Medical Corps.

Lieutenants (on probation) C. A. Slaughter and W. L. A. Harrison are confirmed in their rank.

TERRITORIAL FORCE.

Royal Army Medical Corps.

Highland Mounted Brigade Field Ambulance: Captain A. Mowat to be temporary Major whilst in command of a Field Ambulance.

Yorkshire Mounted Brigade Field Ambulance: Captain A. H. Benson to be temporary Major whilst in command of a Field Ambulance.

East Lancashire Field Ambulance: Major W. L. Bentley to be temporary Lieutenant-Colonel whilst in command of a Field Ambulance.

Lowland Field Ambulance: Major M. Dunning to be temporary Lieutenant-Colonel whilst in command of a Field Ambulance.

South Midland Field Ambulance: Lieutenants to be Captains: H. N. Crowe, W. J. F. Craig, and J. Bannerman.

Northumbrian Field Ambulance: Lieutenant P. J. Sheedy to be Captain.

Wessex Field Ambulance: Lieutenant E. H. Helby to be Captain.

Eastern General Hospital: Lieutenant O. Inchley to be Captain.

London General Hospital: Major J. Calvert to be Lieutenant-Colonel. Captain F. W. Andrewes to be Major. Major (temporary Colonel, A.M.S.) A. H. Tubby to be Lieutenant-Colonel, and remain seconded. The undermentioned Captains to be Majors:—F. F. Burghard, and remain seconded, A. M. Gossage, and H. F. Waterhouse.

Northern General Hospital: Lieutenant H. W. Kerrigan to be Captain.

Western General Hospital: Lieutenants F. H. Lacey and J. T. Williams to be Captains.

London Sanitary Company: C. N. Atlee to be Lieutenant.

North Midland Divisional Sanitary Section: Lieutenant A. White to be Captain.

East Anglian Field Ambulance: Captain L. H. Hutchins relinquishes his commission on account of ill-health. Lieutenant (temporary Captain) G. C. Gray to be Captain.

London (City of London) General Hospital: Lieutenant R. J. W. A. Cushing to be Captain.

Wessex Casualty Clearing Station: Lieutenant T. J. Wright to be Captain.

West Lancashire Divisional Sanitary Section: Lieutenant A. Reid, from London Sanitary Company, to be Lieutenant.

London (City of London) Field Ambulance: Lieutenant A. H. Platt to be Captain.

Southern General Hospital: To be Captains: Lieutenants K. H. Gill and G. L. Wilkinson.

London (City of London) Sanitary Company: Lieutenants to be Captains: M. Greenwood, P. Hartley, and E. R. Matthews.

Eastern Mounted Brigade Field Ambulance: To be Lieutenants: E. H. Coyne and P. J. Smyth.

Welsh Border Mounted Brigade Field Ambulance: Lieutenant W. Morgan resigns his commission.

Highland Field Ambulance: G. Torrance to be Lieutenant.

Home Counties Field Ambulance: C. C. Robinson to be Lieutenant.

London Sanitary Company: A. E. Jury to be Lieutenant.

South Midland Casualty Clearing Station: To be Lieutenants: A. G. Banks and C. A. Raison.

Attached to Units other than Medical Units.—To be Majors: Major W. M. Hamilton, from the Territorial Force Reserve, and Captain D. E. Dickson. To be Captain: Lieutenant L. S. Willcox. To be Lieutenants: H. Jacques and P. A. Chillcott. Major G. S. Mill relinquishes his commission on account of ill-health.

The Arnott gold medal for conspicuous gallantry at the front was presented to Captain W. Loughman, R.A.M.C., on St. Patrick's Day by the Irish Medical Schools' and Graduates' Association.

Correspondence.

"Audi alteram partem."

THE DANGER TO CIVILIAN COMMUNITIES OF A TYPHOID-PARATYPHOID OUTBREAK.

To the Editor of THE LANCET.

SIR,—As one who has taken a special interest in enteric fever for many years and has had opportunities of looking at this disease from a varied point of view, I was naturally very interested in your annotation on this subject in THE LANCET of Feb. 12th and also in the letter in the following issue by Dr. R. Donaldson, whom I had the pleasure of meeting a short time ago when I was attracted to Reading by the news that there had been an unusual amount of enteric fever in that town.

I may say at once that, in my opinion, the danger of an outbreak of the enteric group of diseases caused by the return of soldiers from the front is very small indeed. The carrier is, of course, the indirect cause of all outbreaks, either through water, milk, flies, or direct contact, but provided reasonable precautions are taken with milk and water the risk from direct contact is insignificant. Let me give briefly a few of the reasons for this belief. We start with the fact that experience in India and at home has shown that about 2 per cent. of cases of enteric fever become chronic carriers. Every town in England must contain a large number, the total having been estimated by some to be as much as 4 per 1000 of the population, yet the enteric-rate in English towns is steadily declining, while the actual number of cases attributed to this cause works out at about 1 in 10,000 per year, although overcrowding and squalor are not unknown among the poorer classes. In December, 1904, an epidemic of 1000 cases broke out in Lincoln, but during the time that the temporary and chronic carriers were returning to their homes in increasing numbers the number of cases was steadily decreasing, until in August there were none at all, and since 1904 the enteric-rate of Lincoln has continued to diminish.

Again, if direct contact is a dangerous source of infection the disease ought to be common in troopships. For the last 25 years an average of about 50,000 troops have travelled in this way, and numerous carriers must have been present among the invalids and men returning from India, Egypt, and South Africa; yet, according to army medical reports, cases contracted on board ship are very rare indeed. After the South African War the number of carriers must have been considerably increased in England, but the disease has steadily diminished.

To come to Reading, where the outbreak is attributed to the soldiers, if it were due to the cases in the War Hospital one would expect it to focus round that area, but it is not so. If it is due to soldiers in billets, Reading so far is the only town that reports an excess of the disease, though we may assume that the conditions are the same as in most towns and even villages in England. Dr. Donaldson thinks that because out of 40 cases one was paratyphoid A a military source of the disease is probable. As it is only within the last few years that any notice has been taken of paratyphoid fevers, the actual number of such cases occurring in England is rather an unknown quantity. In India, where blood culture has been practised for several years, experience shows that the bacilli found in blood of patients treated in enteric wards are very varied in character.

These considerations naturally make one ask if the water-supply as a cause can be absolutely excluded. Dr. Donaldson admits that "the only obvious thing in common to all the cases is the water-supply, which, being river water, might conceivably be incriminated"; he does not state, though I have been so informed, that B. coli were present in 1 c.c. of water. The medical officer who went to Reading to report on behalf of the military authorities permits me to say that he certainly thought the outbreak was due to water in some way or other.

I have long been of opinion that the danger of infection by direct contact from carriers has been very much exaggerated. We invalid carriers out of the army into civilian life, but apparently nothing happens. The Local Government

Board Reports show numerous cases of infection by direct contact, but they occur among a population of millions, and include milk epidemics. It is generally agreed in India that, although milk and water epidemics have occurred, enteric in the past was chiefly due to some other cause. This could hardly have been direct contact from carriers, as it can be shown easily that the disease was one of stations and seasons and had no relation to the probable number of carriers among the troops, and the sudden decline of the disease started before the practice of isolating carriers commenced. To my mind the strongest argument against the case for carriers is the fact that even with soap and water it is difficult to disinfect the hands if soiled with infected fæces. We know in India that natives get enteric fever, so there must be carriers among them. The ordinary native servant, a vegetable feeder, has his bowels open twice a day, and completes his toilet by directly handling fæcal matter. Next he cleans his hands with water, possibly with mould, and then probably proceeds to prepare bread and butter, or handle tea-cloths or clean plates for his master's table. Under such conditions the amount of enteric fever should be enormous, yet Bombay and Calcutta, both cities with a large European population, have been singularly free from it for the last 30 years.

The question of carriers is very important. At the present time we are keeping a large number of beds in hospitals occupied by convalescents, and sometimes by perfectly healthy men, because we are afraid to let them out into barracks. Does the danger warrant our taking all this trouble and incurring all this expense and keeping fighting men from the front? My answer is: Let the urine only of typhoid convalescents be examined; take every precaution with the rare and dangerous urinary carrier, but ignore altogether the fæcal carrier.

I am, Sir, yours faithfully,

N. FAICHNIE,

Tidworth, Hants, March 23rd, 1916. Lieutenant-Colonel, R.A.M.C.

THE SHORTAGE OF DRUGS.

To the Editor of THE LANCET.

SIR,—Even in military hospitals one is constantly hampered by the shortage of indispensable drugs. The poorer part of the population must suffer far more. The shortage of the salicylate group is most grievous, and I write to suggest the importance of growing the common willow, *Salix alba*, as well as wintergreen, *Gaultheria procumbens*, and birch, *Betula lenta*. Wintergreen and willow will grow on any damp soil without cultivation. Thousands of acres of such soil are wasting in Britain and Ireland, and although the war may be over before we can utilise their medicinal products, there is always use and demand for oil of wintergreen and salicin.—I am, Sir, yours faithfully,

March 24th, 1916. J. C. MCWALTER, M.A., M.D., M.R.I.A.

"ALBUMINURIC NEURO-RETINITIS."

To the Editor of THE LANCET.

SIR,—Dr. Samuel West, in his letter in your issue of March 25th, differentiates albuminuric retinitis into two forms, the exudative and the degenerative, and contends that they are distinct, that the distinction is fundamental, and that they stand in a different relation to two forms of chronic nephritis. These conclusions, he tells us, are the result of long clinical experience, presumably at a general hospital. Possibly ophthalmic cases seen at a general hospital differ in some mysterious way from those met with at a special hospital.

Eighteen years' clinical and pathological experience at ophthalmic hospitals, so far from affording material confirmatory of his views, directly contravenes them. Dr. West's types, if such they may be called, are found also in acute nephritis and in the nephritis of pregnancy. The latter, it is to be observed, has as its most prominent feature a fatty degeneration of the tubal epithelium, and is not really an acute inflammation. So far from any particular appearance of the retina being pathognomonic of a particular variety of kidney disease, no absolute reliance can be placed upon retinal appearances as a distinctive character. In diabetes, for instance, a condition exactly resembling the "typical" albuminuric variety of retinitis is so often found that the examination of the urine alone will reveal the causal agency. This fact is a well-known pitfall for the unwary at ophthalmic hospitals. Many cases of this disease are characterised by the presence of small brilliantly white spots situated in the retina and occupying chiefly the region of the macula; but according to Dr. West these spots are found only in cases of granular kidney. The same is true of leucocythæmia, pernicious anæmia, and arterio-sclerosis and cerebral tumour. The late Sir William Gowers instances a case of intense neuro-retinitis in a chlorotic girl in which, after the subsidence of the swelling, the picture might very well be taken as an example of the "degenerative" type, which, if we take Dr. West as our guide, is pathognomonic of granular kidney. Since albuminuric neuro-retinitis is essentially a degenerative process, nothing is gained by labelling it "degenerative"; to do so is pleonastic.

Both of the types which Dr. West regards as distinctive and of fundamental importance from the diagnostic standpoint are due to the same cause, passive œdema and vascular degeneration. Neither type can be said to be either distinctive or pathognomonic.

I am, Sir, yours faithfully,

Bayswater, W., March 27th, 1916. EDGAR CHATTERTON.

TREATMENT OF SEPTIC WOUNDS WITH GLYCERINE AND ICHTHYOL.

To the Editor of THE LANCET.

SIR,—At a Divisional Rest Station in France, where practically all the operations were of the type carried out in the surgical out-patient department of a civil hospital—namely, the opening of superficial abscesses—it was decided after reading Major Duggan's articles in the *Journal of the Royal Army Medical Corps* to try dressing these cases with glycerine and ichthyol instead of boric fomentations. At first a 20 per cent. but later a 10 per cent. solution spread on ordinary white lint was used, and then for economy commercial instead of pure glycerine was employed. Fifty-nine cases were thus treated after operating under an anæsthetic, besides many others of which no record was kept and in which no anæsthetic was necessary. They included carbuncles, whitlows of all types, and three cases of cellulitis, two of the upper and one of the lower limb.

In favour of this treatment are:—1. Saving of labour and material—one application daily in place of three boric fomentations. 2. Efficiency as a dressing. Several of the cases had been previously treated with boric foments; in these the discharge was never more in 24 hours on the one glycerine and ichthyol dressing than on any one of the fomentations, though these had been changed twice and thrice daily. 3. The dressing does not adhere to the wound. 4. Men voluntarily told the nursing orderlies that they found the ichthyol dressing more soothing. This treatment is therefore recommended to medical officers, civil and military, for use in dressing superficial septic sores and wounds, as being equally efficacious as the boric fomentation, and more economical as regards time and material.

I am, Sir, yours faithfully,

G. G. ALDERSON, M.B., B.C. Cantab., F.R.C.S. Eng.,
Captain, R.A.M.C.

MEDICAL PRACTITIONERS AND AFTER-WAR PROBLEMS.

To the Editor of THE LANCET.

SIR,—The time at which a large number of practitioners who have left their practices and are now serving their country in various parts of the United Kingdom and abroad will be able to return to civil life is, of course, as yet quite uncertain, but it is obvious that a certain amount of anxiety is being felt, and it may not be considered premature to call attention to this matter through your columns.

After the South African War many societies were formed, having for their object the closer association of medical men who had seen service in that campaign. The problems involved in the present war are infinitely more exacting and vital.

The suggestion is put forward that instead of waiting till after the war, an association might be at once formed of practitioners interested. A central organising committee consisting of those serving in, or near, London would be necessary, and the support likely to be accorded the movement from those serving in distant stations could be easily estimated.—I am, Sir, yours faithfully,

March 24th, 1916. TWENTY MONTHS' SERVICE.

The War.

THE CASUALTY LIST.

THE following names of medical officers appear among the casualties announced since our last issue:—

Died.

Captain R. F. Hebbert, I.M.S., was a student of St. Thomas's Hospital, London, and joined the Indian Medical Service when he qualified in 1906.

Colonel J. Harper, R.A.M.C. (T.F.), Assistant Director of Medical Services, 1st London Division (T.F.), qualified in 1881, and was in practice in London.

Wounded.

Lieutenant-Colonel E. A. Wraith, R.A.M.C., 1st North Midland Field Ambulance (T.F.).

Captain G. D. Ferguson, R.A.M.C., attached to the Royal Field Artillery.

Captain R. Condy, R.A.M.C.

Lieutenant J. P. Musson, R.A.M.C., attached to the 2nd Suffolk Regiment.

Lieutenant J. Young, R.A.M.C.

DEATHS AMONG THE SONS OF MEDICAL MEN.

The following sons of medical men must be added to our lists of those who have fallen during the war:—

Captain J. A. Graham, 7th Lincoln Regiment, youngest son of the late Brigade-Surgeon H. W. Graham, Bengal Army.

Lieutenant M. E. King, 13th Battalion Middlesex Regiment, third son of the late Dr. H. W. King, of Chester, Brigade-Surgeon-Lieutenant-Colonel of the Cheshire Volunteer Infantry Brigade.

Second Lieutenant G. K. Smith, 5th Middlesex Regiment, younger son of Dr. H. Smith, of Chatham.

Second Lieutenant C. W. Kenyon, Royal Sussex Regiment, attached to a Trench Mortar Battery, son of Dr. G. H. Kenyon, of Horsham, Sussex.

THE CENTRAL MEDICAL WAR COMMITTEE: CONFERENCES OF REPRESENTATIVES OF LOCAL MEDICAL WAR COMMITTEES.

We published last week an account of the conferences which have been held at Leeds and London between representatives of the Local Medical War Committees of the districts. The following notes deal with the conferences at Birmingham and Bristol.

The conference of representatives of the Local Medical War Committees in the Midlands and North Wales was held in the Midland Medical Institute, Birmingham, on March 23rd. The chair was taken by Dr. W. J. Garbutt, chairman of the Birmingham Local Medical War Committee, and the arrangements were made by Mr. J. J. Bekenn, honorary secretary of the same committee. There were about 100 present, including a number of Birmingham medical men of military age. Major Lucas, Mr. N. Bishop Harman, and Dr. Alfred Cox attended on behalf of the Central Medical War Committee. After a statement had been made on the general situation, questions were invited and answered. The questions were very similar to those raised at the Leeds and London meetings as reported in THE LANCET of March 25th. The representatives of the North Staffordshire Committee were anxious that the Central Medical War Committee should issue some general plan for dealing with the practices of men who had died on service. The example of Nottingham, which formulated such a scheme in September last, was mentioned, and the representatives of the Central Committee undertook that some model arrangement should be issued to Local Committees. A suggestion was made that the Central Committee would be improved if it contained representatives of provincial industrial practice. In reply it was pointed out that the Committee had no power to coöpt more members, and that any change in its composition must be dealt with at the next Representative Meeting. The representative of Mid-Staffordshire moved a resolution from that committee urging that if enrolment were necessary the Government should make it compulsory. Other representatives declared that they had no mandate to vote on such a proposition, and the chairman ruled it out of order. Votes of thanks to the representatives of the Central Committee and the chairman closed a very successful meeting.

The conference of representatives of the Local Medical War Committees in the South-Western and Western Counties and in Central and South Wales was held in the University at Bristol on March 24th. The chair was taken by Mr. G. T. Myles, chairman of the Bristol Local Medical War Committee, and Mr. H. F. Devis, honorary secretary of that committee, was responsible for the arrangements. There were over 30 representatives present. Mr. T. Jenner Verrall, LL.D., chairman, and Dr. Alfred Cox, one of the secretaries of the Central Medical War Committee, attended on behalf of that Committee. Mr. Verrall and Dr. Cox dealt with the reasons for the adoption of the enrolment scheme and many of the general difficulties connected with it. Questions were then invited. Strong exception was taken from more than one area to the presence in Territorial hospitals of men of military age who had not undertaken the Imperial obligation. Mr. Verrall pointed out that the Central Committee had been definitely and officially informed that all medical men of military age holding Territorial commissions would be asked either to sign the obligation or resign. He undertook that inquiries would be made as to the cases raised at the meeting. The Swansea representatives stated that the action of certain medical men who had attested and had been exempted or granted postponement by the local tribunal had had a very bad effect on the work of their committee, so much so that they had resolved not to press for enrolment. They declared that the military representative at the tribunal had taken no action to prevent medical men from being exempted—rather the reverse. Representatives from Glamorgan and from Somersetshire stated that the action of the Local Insurance Committees in placing unnecessary difficulties in the way of men who desired to offer for military service made it doubtful whether any more men could be got from those areas. Mr. Verrall asked that such cases should be reported fully to the Central Committee, which would undertake to place them before the Commissioners, who up to now had shown every disposition to facilitate panel practitioners going on military service. The North Glamorgan representative said he saw no better plan for satisfying the medical needs of the army than the enrolment scheme which, if a success, would redound to the credit of the profession. He urged those present to put all their energies into it. Votes of thanks were passed to Mr. Verrall, Dr. Cox, and the chairman of the meeting.

JOINT COMMITTEE OF THE ENGLISH ROYAL COLLEGES TO ADVISE ON MEDICAL RECRUITING.—Last week we noted the recent resolution of the Royal College of Physicians of London expressing its willingness to join the Royal College of Surgeons of England in forming an Advisory Committee to give advice to the Government in relation to medical men in the metropolitan district required for service in the army, and to assist in cases of special difficulty arising elsewhere in England and Wales, and coming before the Central Tribunal of the Military Service Act. This Advisory Committee has now been appointed, the names being: from the College of Physicians, Dr. Frederick Taylor (President), Dr. J. Galloway, Dr. Sidney Martin, and Dr. W. Pasteur; from the College of Surgeons: Sir W. Watson Cheyne (President), for whom when absent Sir Rickman J. Godlee will act, Mr. William F. Haslam, Mr. D'Arcy Power, and Mr. Charles Ryall. The joint committee has already commenced its sittings at the College of Physicians and Mr. F. G. Hallett is acting as secretary. It was understood from the outset that the opinion of the Advisory Committee should be transmitted to the Government Department concerned through the Central Medical War Committee without alteration. The College of Surgeons made the further suggestion that time would be saved by the institution of a preliminary survey of the minimum necessities of the several metropolitan hospitals and medical schools in respect of staff. The appointment of this Advisory Committee by the English Colleges should go a long way to set the minds of those at rest who desired a consideration of their personal difficulties from the general standpoint of medical practice and ethics.

WOUNDED ALLIES RELIEF COMMITTEE.—At the English Military Hospital at Limoges, maintained by the Wounded Allies Relief Committee, five French soldiers were recently presented with the Croix de Guerre.

THE King of Serbia has conferred the Third Class of the Order of St. Sava upon Lieutenant-Colonel H. E. M. Douglas, V.C., C.M.G., D.S.O., R.A.M.C., Deputy Assistant Director of Medical Services.

OBITUARY OF THE WAR.

ARTHUR RYLAND CHAVASSE, B.A., M.B. OXON., M.R.C.S.,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain A. R. Chavasse, who died in France at No. 2 General Hospital, B.E.F., on March 12th, as a result of broncho-pneumonia, was aged 27 years, and was the only son of Lady Chavasse and the late Sir Thomas Chavasse, of Birmingham. He was educated at Harrow School and Hertford College, Oxford, and entered St. Thomas's Hospital, where, after graduating as B.A. and M.B. at Oxford, he held the house appointments of physician, obstetric physician, and casualty officer. He was also resident medical officer to Queen Charlotte's Hospital. He surrendered this appointment in 1914 to join the Red Cross Society in France, then entering the Royal Army Medical Corps as a temporary lieutenant, and working first at Netley and then at No. 4 and No. 2 General Hospitals in France. A fellow officer writes of him that he was devoted to his work and loved by all who came in contact with him. He had recently been promoted captain, when he was taken by the illness which proved fatal.



A life-long friend writes: "Arthur Chavasse was one of those men whom to know was to love. He was a wonderful personality, so full of energy and enthusiasm. He was a devout Churchman and spent his leisure hours, when at St. Thomas's Hospital, in the slums of the East-End. He had an absolute horror of ostentation or publicity. Now we know a little of his endless acts of kindness and of his true generosity." Lady Chavasse has received a message of regret and sympathy from the King and Queen.

DOUGLAS ARTHUR CAMPBELL LAYMAN,

LIEUTENANT, 17TH LANCASHIRE FUSILIERS.

Second Lieutenant D. A. C. Layman, who was killed in France on Feb. 22nd, at the age of 22, was a medical student and the grandson of a medical man. He was educated at Dulwich College, where he was a member of the Officers Training Corps, entering St. Thomas's Hospital in 1913, and taking part of the Second M.B. in July, 1914. The secretary of the hospital writes: "From the first declaration of war Layman was anxious to do his best to help. He made a special appeal for experience in dressing in the Casualty Department, and in October, 1914, went to help with Red Cross work in France. He subsequently did nine months excellent work on the I.M.S. Hospital Ship, *Glengorm Castle*. Even this work did not content him, he wanted to do more, and by obtaining a commission in the Lancashire Fusiliers in September, 1915, and going to the front, he sacrificed everything to his ideal of duty."



THE RED CROSS HOSPITAL UNIT IN MONTENEGRO.—In a recent summary of work issued by the British Red Cross Society and the Order of the Hospital of St. John of Jerusalem in England there is an interesting report, signed by Dr. F. G. Clemow, C.M.G., head of the unit, on the work of the Red Cross Hospital in Montenegro. The unit left England on Jan. 19th, 1915, with three medical men—Dr. Clemow, head of the mission, and Dr. F. W. E. Burnham and Dr. L. V. Tebbs, who subsequently had charge of the general section and infectious wards respectively. The other members of the staff were two nurses, two V.A.D. attendants, and four orderlies. The equipment consisted of material for a hospital of from 70 to 100 beds, the stores being contained in some 400 cases and bales. After considerable delay, owing to weather and war conditions, the unit arrived at Plevlje in March, and took over charge of the hospital there—the principal military hospital in Montenegro. The hospital consisted of two separate sections, one of eight pavilions built by the Austrians, as barracks, during their military occupation, and a hospital building. The first-named buildings were reserved for general and medical cases, and the second for infectious cases. At the time of occupation there were 126 patients in the wards, but the number rapidly doubled, and later rose to more than 300. For a short period Dr. Peyer, a Swiss doctor, and Dr. Vullanovitch and Dr. Krasky, both of the Montenegro service, rendered assistance. Owing to bad sanitation and administration the buildings when taken over were far from ideal for hospital purposes. To increase the accommodation other buildings were taken over, and a vote of £1000 from the British Red Cross Society resulted in the construction of satisfactory hospital buildings. There were a few cases of typhus fever in the wards when the hospital was taken over, and these rapidly increased in number, while to add to the difficulties of the staff first Dr. Tebbs and afterwards Dr. Peyer contracted the disease, and one of the orderlies fell ill and died. At the end of March Dr. Clemow, at the instance of General Vukotitch, drew up a series of army orders for the better preservation of the health of the Serbian troops, and in June took part in a conference at Cettinje on the medical needs of the hospital, the army, and the country generally. The King of Serbia, who subsequently conferred decorations and medals on various members of the unit, received Dr. Clemow and expressed appreciation of the work of the unit. In July, on the expiry of the original six months' contract, Dr. Tebbs and other members of the unit returned home, Dr. W. E. Haigh replacing Dr. Tebbs, and others taking the place of the original staff which maintained its complement of 11 members. Until the month of September the majority of cases admitted to the hospital were of the ordinary medical and surgical character. The measures taken to meet the typhus epidemic of the spring, which steadily subsided, included the establishment of baths and of two disinfecting stations, one in the general and the other in the infectious section of the hospital. Every patient admitted had his clothes removed, was bathed and put to bed, and the clothes thoroughly disinfected either with sulphur or (later on) with formaldehyde. In all 143 cases of typhus were admitted, of which 7 died and 136 recovered. In the surgical wards over 500 major operations were performed and Dr. Burnham gained a well-deserved reputation as a surgeon. At the end of September and beginning of October, in order to provide for the large number of wounded, the result of the combined Bulgarian and Austro-German attack, many cases of chronic or incurable illness were sent to their homes. A casino and concert hall were converted into a hospital which was soon filled, while many of the severely wounded had to be placed in the "infectious" section and of the lightly wounded in the "convalescent hospital." The total numbers rose to well over 300, and at this time, as well as during the typhus epidemic in the spring, the stress of work on all members of the unit was very considerable. In all between 300 and 400 wounded were in the hospital at the final evacuation. The total number of in-patients treated in the hospital was approximately 3000 and that of the out-patients the same. About the middle of November, owing to the pressure of the Austrians, it was found necessary to remove the hospital from Plevlje to Shahovitza. At this time there were 332 patients in the wards, of whom 223 were wounded. In three days 280 patients were sent either to Shahovitza or to their homes, and

when the unit left, which was on Nov. 21st, only 50 patients remained behind. These were left in charge of Dr. Stais, a Greek doctor, and Dr. Kievenaar, a Dutch medical man, who followed the unit next day with the patients. The patients' journey and the adventures of the unit are briefly described by Dr. Clemow, and but little imagination is required to realise the hardships which the party had to endure or to picture their lucky escapes from disaster. In December all the stores were exhausted and the party left Serbia and arrived in England in January, 1916. In closing his report Dr. Clemow bears testimony to the excellent work of all the members of the unit, the best witness to the valuable work of Dr. Tebbs being the low typhus mortality, while equally valuable work was done by Dr. Haigh, and his untiring assistance to all during the retreat deserves, says Dr. Clemow, more than a passing word. Dr. Burnham's work in the surgical wards has already been alluded to.

HEALTH OF MUNITION WORKERS.—The munition workers of this country are fortunate in possessing a health committee which is both alert and enlightened. We have already noticed memorandums dealing with Sunday labour, canteens, the hours of work, and the employment of women. Four others have just appeared in which are considered industrial fatigue and its causes (No. 7). special industrial disease (No. 8), ventilation and lighting of munition factories and workshops (No. 9). sickness and injury (No. 10). All of these are printed at H.M. Stationery Office and may be obtained from Wyman and Sons at the cost of 1*d*. or 1½*d*. To the medical bearing of these pamphlets we shall return later.

PROPHYLAXIS OF VENEREAL DISEASE.—In recent years attempts have been made in all armies and navies to prevent venereal disease by methods of what may be called subsequent prophylaxis. Men after exposure to infection are invited, and indeed constrained, to attend for special washings and anointings which shall prevent the development of any virus they may have picked up. And very often it has been said, by medical officers of small units usually, that the results of these methods have been quite successful. But now, in the *Military Surgeon* (Washington, D.C.) for January, Surgeon (that is, Fleet-Surgeon) R. C. Holcomb, U.S.N, examines the medical statistics of the United States Navy during the six years that have elapsed since, in January, 1909, prophylaxis was commenced, and concludes that "there has since been no drop in the admission-rate, and that therefore the preventive has not prevented." He then asks why the propaganda has failed, and ascribes it to the subsequent prophylaxis being in most cases too long delayed. He himself found, on critically examining records of some 3000 cases, that of those who took precaution within eight hours of exposure only 1·5 developed disease. If precautions were taken between the eighth and the twelfth hour 3·3 per cent. were attacked, but of those who delayed treatment to the second 12 hours 5 per cent. suffered. The experience of the Italian navy is very similar. Venereal prophylaxis, with calomel ointment and protargol, was instituted in October, 1913. and Captain Dr. Serra, a surgeon in that navy, details in the *Annali di Medicina Navale* for October, the benefits this prophylaxis has brought to the group of 2600 men who are under his care at Spezia He concludes that the men who on their return from leave use the prophylactics supplied invariably escape syphilis. The annual report of the Surgeon-General of the United States Navy for 1915 also takes much the same view, ascribing failure to delay, this delay resulting from ignorance, intoxication, or indifference. Surgeon Holcomb thinks the best prophylaxis will be found to be moral and to lie in a better public opinion, a higher self-control.

CHARING CROSS HOSPITAL.—The annual court was held on March 23rd, Mr. George Verity, J.P., presiding, when a very satisfactory condition of affairs was reported. The chairman stated that the hospital was now working at its full capacity of 300 beds, and he was able to report a great improvement in equipment. The hospital mortgage, which 15 years ago was £85,000, had been reduced to £59.000, and any legacies or exceptional amounts received by the hospital were applied towards the liquidation of this capital debt. The officials of the King's Hospital Fund stated that the cost per bed at this hospital was the lowest but one of any in the Metropolitan area. Dr. G. Dickinson's 17 months' gratuitous service as resident medical officer in order to meet the shortage due to the war demands was specially mentioned.

Obituary.

MARY CHARLOTTE MURDOCH, L.R.C.P., L.R.C.S.EDIN., L.F.P.S. GLASG.,

SENIOR PHYSICIAN TO THE VICTORIA HOSPITAL FOR CHILDREN, HULL.

THE death occurred on March 20th of Miss Mary Charlotte Murdoch, senior physician to the Victoria Hospital for Sick Children, Hull.

Mary Charlotte Murdoch was born in Elgin and spent part of her child life and educational period in Lausanne, as well as in London. When the death of her parents left her independent she decided to devote the small sum of money at her disposal to studying for the medical profession, although this resolve meant much self-denial, and in her case considerable courage, as she had to contend already with the gastric hæmorrhages which throughout her life occasionally prostrated her. After obtaining qualifications from the Scottish Corporations, she worked for a time as clinical assistant at the New Hospital for Women in the Euston-road, and was later curator of the museum of the London School of Medicine for Women. In 1892 she became house surgeon to the Victoria Hospital for Children at Hull, a post which she held for two years, when an attack of gastric hæmorrhage compelled her to resign. Upon recovery she was appointed assistant medical officer for the Tottenham Fever Hospital, London, under Dr. R. A. Birdwood, to whose instruction and clinical example she attributed the skill which she undoubtedly possessed in the diagnosis and treatment of acute infectious diseases. In 1894 she returned to Hull, where she had made many friends, and, starting in private practice, met with immediate success. She was appointed honorary assistant physician to the Victoria Hospital, where she had formerly been resident, and three years later became full physician, holding the post at the time of her death. Among other appointments she was physician to the Lees' Walk Home for Girls and to the Hull Central Crêche, and was a certifying surgeon under the Factory Acts. She was also consulting physician to the Harrow Road Hospital for Children in London, and was keenly interested in the suffrage question.

Mary Charlotte Murdoch was more than a successful physician: she was an influential personality. She did much valuable public work when physically not equal to the strain, she was a woman of large sympathies, and invariably acted up to her high ideals, and there is no doubt that in her the medical profession and women workers have lost an outstanding force for good.

GEORGE ALFRED HEBERDEN, M.R.C.S., L.R.C.P., D.S.O.

THE death is announced from Sea Point, South Africa, of George Alfred Heberden, which occurred from heart trouble in January last, in his fifty-sixth year. He had been an invalid for some time, and recently left his home at Victoria West, South Africa, for the Cape, where he somewhat improved. At the beginning of the year, however, he had a relapse, which soon proved fatal. George Heberden bore a name well known in medicine, his great-grandfather being the famous William Heberden, of Heberden's asthma and Heberden's nodes. His grandfather was also a medical man, while his father was a Berkshire clergyman. George Heberden was educated at Jesus College, Cambridge, and later, determining on the medical profession, he entered as a student at St. George's Hospital. He took the Conjoint English qualification in 1888, and almost immediately went to South Africa and entered upon practice at Kenhardt. Afterwards he became district surgeon to Barkly West, where he was when the South African War broke out. His services as medical officer at the siege of Kimberley were of marked value, and for them he received the D.S.O. Subsequently in 1906 he became district surgeon and railway medical officer at Victoria West, which offices he held at the date of his death.

PROFESSOR EUGENI PAVLOV.—A Russian correspondent writing to us from Moscow informs us that the news of the death of Professor Ivan Petrovitch Pavlov, director of the Physiological Section of the Institute for Experimental Medicine at Petrograd, was sent in error. The Professor Pavlov who died in February last was not the famous physiologist, but Professor Eugeni Vasilievich Pavlov, once a prominent Russian surgeon and well known in his own country for his excellent social work. Professor Eugeni Pavlov was 71 years of age.

Medical News.

SOCIETY OF APOTHECARIES OF LONDON.—At examinations held recently the following candidates were successful:—

Surgery.—M. Dwyer (Sections I. and II.), Leeds; J. Fox-Russell (Sections I. and II.), Middlesex Hospital; H. M. Gray (Sections I. and II.), Guy's Hospital; and R. Milne (Sections I. and II.), London Hospital.

Medicine.—M. Dwyer (Section I.), Leeds; E. N. Glover, (Sections I. and II.), Guy's Hospital; and R. Milne (Sections I. and II.), London Hospital.

Forensic Medicine.—C. G. Bunn, Charing Cross Hospital; M. Dwyer, Leeds; E. N. Glover, Guy's Hospital; R. Milne, London Hospital; R. H. Pettersson, St. George's Hospital; and J. M. Wall, St. Thomas's Hospital.

Midwifery.—R. Milne, London Hospital; L. F. Pain, Royal Free Hospital; and A. E. Pollitt, Manchester.

The Diploma of the Society was granted to the following candidates, entitling them to practise medicine, surgery, and midwifery:—J. Fox-Russell, H. M. Gray, and R. Milne.

UNIVERSITY OF DURHAM: FACULTY OF MEDICINE.—At the third examination for the degree of Bachelor of Medicine held recently the following candidates were successful:—

Materia Medica, Pharmacology and Pharmacy, Public Health, Medical Jurisprudence, Pathology and Elementary Bacteriology.—Percy Vernon Anderson, Richard Vere Brew, Hugh John Dingle, Donald Henegan, William Andrew Hewitson, Charles Gordon Irwin, George Malayramon Kerry, John Kerr Ritchie Landells, Sadek Abdel Shehid, Iskander Soliman, and Harold Ivan Sterne-Howitt.

CENTRAL MIDWIVES BOARD.—A meeting of the Central Midwives Board was held at Caxton House, Westminster, on March 16th, with Sir Francis H. Champneys in the chair. The Board had already considered a large number of suggestions for the amendment of the rules sent in by local supervising authorities, medical officers of health, examiners, and others; and, the revision being now completed, have decided to ask the Privy Council to approve the revision and to order that the new rules shall come into force on July 1st next, for a period of five years. A letter was considered from the General Medical Council with regard to an apparent case of "covering" an uncertified woman by a registered medical practitioner. The Board directed that the papers in the case be forwarded to the General Medical Council with a request that they will take such action in the matter as may seem fit to them, and that if so desired the Board will undertake to appear as prosecutors in the case. Letters were considered from the clerks to the Epsom and Chester boards of guardians asking that the Epsom Infirmary and the Chester Union Hospital may be treated as training schools, where a period of four months' training may be substituted for one of six months as provided for in the new rules. The Board directed that the clerks be informed that the Board has no power to grant the requests. A letter was considered from the medical officer of health of Liverpool asking whether under the new rule the conceded four months' period of training may be taken during the stipulated three years' training and may form part of such training. The Board decided that there is nothing in the rules to prevent the four months' midwifery training contemplated by the rule being taken during the three years' general training and forming a part of it.

LIVERPOOL MEDICAL INSTITUTION: JUBILEE OF MR. EDGAR A. BROWNE AND DR. GEORGE C. WALKER.—Fifty years' membership of the Liverpool Medical Institution is a notable record, and it is one on which the cordial congratulations of a large number of fellow members and professional colleagues were paid recently at a special meeting of the society, to Mr. Edgar Athelstane Browne, consulting surgeon to the Liverpool Eye and Ear Infirmary, and Dr. George Charles Walker, of Southport. The Lord Mayor was unfortunately prevented from attending the ceremony in order to tender the good wishes of the city to the two medical veterans. Dr. C. J. Macalister, the president of the institution, occupied the chair, and tendered a graceful tribute to the work and personality of both members, whose association with the society dated from the year 1866. Professor T. R. Glynn spoke of the ready wit and lively imagination of Mr. Edgar Browne, inherited from his distinguished father Hablot Browne. Dr. Richard Caton and Mr. T. H. Bickerton having both borne testimony to the personal qualities of the two members, a resolution setting forth their professional history, together with an expression of the kindly sentiments of their brethren on their interesting jubilee, was cordially adopted.

DONATIONS AND BEQUESTS.—The late Colonel H. L. Florence, V.D., has, among other bequests, left £10,000 each to St. Bartholomew's Hospital and Charing Cross Hospital. The residue of the estate, subject to two life-interests, amounting to about £100,000, is to be divided equally between St. Bartholomew's Hospital, Charing Cross Hospital, the National Gallery, and a number of other hospitals and museums.

THE MEDICAL PROFESSION AND MASSAGE ESTABLISHMENTS.—Under the provisions of the London County Council (General Powers Act), 1915 (Part V.), an establishment for massage or special treatment is defined as meaning any premises in the County of London used or represented as being or intended to be used for the reception or treatment of persons requiring massage, manicure, chiropody, light, electric, vapour, or other baths, or other similar treatment, and persons carrying on such establishments must be registered. Medical men are exempted, but they must comply with certain requirements in order to escape registration. These requirements have been the subject of discussion by the Council of the Metropolitan Counties Branch of the British Medical Association, and at a meeting held on March 14th resolutions were adopted to the following effect: (1) "That it is derogatory to the medical profession that a medical practitioner shall be required to furnish two certificates showing that the establishment for which he is responsible 'is not and will not be used for an immoral purpose'"; and (2) "that the terms of the Act in relation to medical practitioners are so widely drawn that no medical practitioner is wholly safe from certification or from inspection under the Act."

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Reports of Medical Officers of Health.

IN the annual report of the Local Government Board for 1914–15 relating to Housing and Town Planning there is a reference to the reports of medical officers of health in the section devoted to housing conditions. The report states that upon the whole there has been a considerable improvement in the reports in the last few years, and there is fresh evidence that the increased interest in the matter taken by medical officers of health and inspectors of nuisances has a material influence for good in the consideration of the subject by the local authorities. There are, however, still cases in which the Board is unable to regard the reports as sufficient and has to ask for a supplementary report containing further and fuller information, but the number of such cases shows a decided tendency to diminish.

Financial Statement of the General Medical Council.

The annual return has been presented to Parliament of the receipts and expenditure of the General Medical Council and the Branch Councils.

An Extraordinary Incident.

The House of Commons on Wednesday afternoon was startled by an extraordinary incident. While a new Member was taking the oath at the table an officer in military uniform who had been sitting in the Strangers' Gallery climbed over into the Distinguished Strangers' Gallery. He scrambled over the rail and for a few moments hung to it by his hands. He then dropped some 20 feet or more on to the floor of the House. Falling heavily, he rose, and evidently addressing the Speaker, said: "Sir, I ask you to protect the heads of British soldiers from shrapnel fire." Members were amazed at the incident and at the rapidity with which it occurred. The officer was speedily conducted from the House. It was afterwards reported at Westminster that the was an officer in the Royal Army Medical Corps.

HOUSE OF COMMONS.

WEDNESDAY, MARCH 22ND.

Military Isolation Hospitals at Cambridge.

Mr. PAGET asked the Under Secretary for War whether his attention had been called to a resolution passed by the town council of the borough of Cambridge on Thursday, March 2nd, 1916, drawing the attention of the War Office to

the lack of control of, and to the insufficient guards placed at, the military isolation hospitals in Cherryhinton-road and Newmarket-road, whereby patients were enabled to escape and thereby cause danger to the health of the community; and would he say what steps he proposed to take in the matter.—Mr. TENNANT answered: This matter is already under the consideration of the Army Council. I cannot state to-day what steps it is proposed to take in the matter.

Tuberculous Soldiers and National Insurance.

Replying to Major ASTOR, Mr. C. ROBERTS (representing the National Insurance Commissioners) said: Approximately 2000 cases of tuberculous soldiers have passed through the hands of the several commissions in connexion with the arrangements made in April, 1915, for the provision of immediate residential treatment for discharged tuberculous soldiers and have been provided with treatment. In addition it is known that a large number of soldiers who became on or after discharge eligible for sanatorium benefit, have made application for the benefit direct to the local Insurance Committees, who have afforded treatment without reference to the Insurance Commissioners. The actual number of such cases, including, of course, many cases which arose before the special arrangements were established, could not be obtained without a special return from all Insurance Committees in the United Kingdom.

A College of Nursing.

Mr. HOGGE asked the President of the Board of Trade whether he had been asked to incorporate a college of nursing; whether he had received protests from societies of trained nurses, in particular the Scottish Society; and whether, in view of the Bill before Parliament prior to the war dealing with trained nurses, he proposed to do so.—Mr. RUNCIMAN replied: I have received certain protests against the grant of a licence to enable a college of nursing to be incorporated with limited liability without the addition of the word "Limited" to its name, including one from the Scottish Society of Trained Nurses. I have not yet received any application for such a licence.

Mr. HOGGE: If my right honourable friend receives an application will he bear in mind that there was a Bill before Parliament on the subject, and will he remember that fact in giving his decision?—Mr. RUNCIMAN: Yes, sir.

Pensions for Army Nurses.

Speaking during the debate on the motion for the second reading of the Consolidated Fund (No. 2) Bill, Mr. H. FORSTER (Financial Secretary to the War Office) said that at the outbreak of the war there was a system of pensions and disablement allowances for the army nursing staff. There were various qualifications as to length of service and so on. These were wholly inapplicable to present conditions. The War Office had taken steps to institute a special scale of pensions for those nurses who were disabled either by diseases, accident, or anything of the kind wholly and directly due to service or aggravated by service, and he hoped that the scale of pensions which had been framed would be sufficiently generous to meet the case. The matter had been discussed with the head of the nursing service, the matron-in-chief.

THURSDAY, MARCH 23RD.

Medical Arrangements in Mesopotamia.

Answering Mr. FELL, Mr. TENNANT (Under Secretary for War) said: Medical arrangements in Mesopotamia are primarily under the control of the military authorities in India, but the Commander-in-Chief in India has been informed that the Army Council would render him any assistance in medical personnel and equipment. All demands have been met without delay. 120 medical officers (including 40 from Egypt) and 205 other ranks, R.A.M.C., have arrived or are on their way. In addition, one British general hospital of 1040 beds and one British stationary hospital of 400 beds have been sent from Egypt. Both these units were fully equipped. Four Indian general hospitals of 500 beds each, which were in this country, have also been sent. Two of these were fully equipped and the remaining two consisted of personnel only. From France the Lahore Indian stationary hospital of 200 beds and 33 medical officers are under orders. A motor ambulance convoy—50 cars with complete personnel—is nearly ready and will leave for Mesopotamia early next month.

Colonel LOCKWOOD: Have any of them arrived?—Mr. TENNANT: I have not had any intimation to that effect.

Mr. MALCOLM asked the right honourable gentleman since what dates all military and medical questions connected with the British expedition to Mesopotamia had been taken over by the War Office.—Mr. TENNANT answered: The new arrangements for the control of operations in Mesopotamia came into force from Feb. 16th, 1916. The Commander-in-Chief in India receives instructions from the Chief of the Imperial General Staff in exactly the same manner as the commanders-in-chief in other theatres, but India remains the main base of the forces in Mesopotamia which is administered by the Commander-in-Chief in India. Such requirements of the force as India cannot meet are supplied by the War Office from other parts of the Empire so far as considerations of general policy do not render this impracticable.

Mr. MALCOLM asked whether Sir William Vincent and General Bingley had proceeded to Mesopotamia to conduct the inquiry into the alleged breakdown of medical arrangements.—Mr. TENNANT said in reply: The Commission, after taking evidence in Bombay, left for Mesopotamia on March 10th. Sir William Vincent is a man of wide administrative experience and has proved efficient in high and responsible official posts, and Major-General Bingley has had a great deal of staff experience and is well suited for an inquiry into the alleged deficiencies in the organisation of supplies. I think these gentlemen are amply qualified to elucidate the facts and to make a fair, complete, and judicial report upon them, having reference to all aspects of the question. They can procure any technical and expert evidence they desire.

Lord HENRY CAVENDISH-BENTINCK asked the Secretary for India whether up to five weeks ago repeated offers made by several hospital supply depôts to send out large quantities of hospital supplies to Mesopotamia were refused; and if so, would he say by whom these offers were refused, and whether he would cause an inquiry to be made into the cause of the breakdown of the hospital arrangements in Mesopotamia.—Mr. CHAMBERLAIN (in a written answer) replied: I have been informed since this question appeared on the paper that the Joint War Committee of the British Red Cross Society and the Order of St. John of Jerusalem in coöperation with the Indian Soldiers' Fund offered their general assistance direct to the general officer commanding Mesopotamia in July last, and repeated their offers at later dates; that stores were sent by them to Basra in September, two motor loads in August and another in October. In December I transmitted further offers on their behalf. On Jan. 31st last the following offer was made officially by the committee to the India Office. They offered to place at my disposal the organisation of the two societies to supplement the provision made by the Indian Government for the care of sick and wounded in Mesopotamia. The offer was in the widest and most generous terms, but referred in particular to the possibility of help in the supply of stores, of clothing, medical comforts, drugs, and luxuries not included in the scheduled army lists, in the supply of barges, motor ambulances, and other vehicles for the transport of the sick and wounded, and in the equipment of hospitals and in providing personnel to staff and administer such hospitals. I immediately communicated this generous offer to the Viceroy. Before replying he had to ascertain that it would not conflict with the organisation and arrangements of similar Indian societies, but on Feb. 19th he informed me that the Indian Council of St. John Ambulance, which from the outset had actively concerned itself with the Mesopotamia Force, would gladly accept the assistance. I communicated the Viceroy's reply the same day to the Joint War Committee. As regards other societies, the Indian Soldiers' Fund in October made inquiry through me of the military authorities in Mesopotamia as to whether clothing and comforts were needed for the troops, and was informed by them in reply that for the present the supply from India was sufficient. I understand that the Fund Committee at that time had independent evidence that there were sufficient supplies at the base. In December I received from the fund and transmitted to the Viceroy an offer to supply bandages, surgical dressings, and other medical and hospital comforts. The Viceroy gladly accepted it and early in January a large contribution of articles, some of which were contributed by the Joint War Committee, was despatched to Mesopotamia. Besides the offers which were made through me and those made independently of me, to which I have already referred, many offers of which I have no knowledge may have been made direct to corresponding societies in India which were engaged in providing comforts for the combatants and medical supplies for the hospitals. I understand that the Indian Branch of St. John Ambulance has from the first taken a very active part in providing for the medical needs of the force. With regard to the last part of the question, I would refer my noble friend to the statement which I made yesterday.

The Organisation of the R.A.M.C.

Sir PHILIP MAGNUS asked the Under Secretary for War whether any and, if so, what steps had been taken to arrange that doctors with special experience in different branches of medicine and surgery who had joined the Royal Army Medical Corps were being so employed by the War Office as to utilise to the best advantage their special qualifications:—Mr. TENNANT answered: I can assure the honourable gentleman that every effort is made to employ gentlemen who join the Royal Army Medical Corps in such a way as to give their individual qualifications every consideration. But I must at the same time point out that it is sometimes not practicable to use their services exclusively in one special line of practice, as the need for special work is limited. My

information is that these gentlemen willingly give their attention to work outside their special qualifications when work of that kind is awaiting attention.

Sir PHILIP MAGNUS asked whether the Government would consider the advisability of reconstituting the Advisory Board to coöperate with the general superintendent in the further organisation of the medical service; and, if so, whether he would have regard to the suggestion that had been made by a number of medical men that such a board should consist of some lay representatives.—Mr. TENNANT replied: I take note of the honourable Member's suggestion, but I cannot admit that a case has been made out for interfering with the organisation as it at present exists.

Mr. R. MCNEILL: Is it not a fact that the Advisory Board was, in point of fact, in existence when the war broke out and that neglect to call it together was without any proper authority whatever?—Mr. TENNANT: No, sir, I think my honourable friend is misinformed as to the facts. I did give him a description of what occurred at the beginning of the war in the debate the other evening. It was quite within the competence of the military authorities to suspend the activities of the Advisory Board as and when they might think proper, but I think it is true that the Board had been sitting up to that time.

Sir PHILIP MAGNUS asked whether the right honourable gentleman could see his way to utilise to a greater extent the services, in part-time work at hospitals or in looking after the health of troops, of medical practitioners resident in the neighbourhood, and by so doing to release a proportion of the men who had volunteered for whole-time service abroad or had been asked to take commissions in the Royal Army Medical Corps.—Mr. TENNANT wrote in reply: The policy suggested in the question is already followed. There is now a considerable number of medical practitioners employed in part-time work, and it is anticipated that this number will be largely increased.

Venereal Disease.

Colonel LOCKWOOD asked the Prime Minister whether it was the intention of the Government to adopt the Report of Lord Sydenham's Commission on Venereal Diseases; and, considering that history showed a recrudescence of such disease at the end of every great war, whether he would take steps to put into immediate action the recommendations of this Commission.—Mr. LLOYD GEORGE (on behalf of Mr. ASQUITH) replied: The recommendations of the Royal Commission are now under consideration.

Steel Helmets for the Troops.

Answering Sir D. GODDARD and Sir I. HERBERT, Mr. LLOYD GEORGE (Minister of Munitions) said that reports of a very satisfactory nature had been received on the steel helmets for the troops, and the necessary steps had been taken to obtain a supply sufficient to meet the requirements of the War Office. More than 300,000 had already been delivered. A satisfactory pattern was approved some five months ago and changes were being made to meet the improvements suggested by experience.

TUESDAY, MARCH 28TH.

Medical Arrangements in Mesopotamia.

Mr. R. GWYNNE asked the Under Secretary for War whether, when the shortage of doctors and nurses and hospital equipment for the forces in Mesopotamia was realised by the Government, any endeavour was made to transfer some of the hospital equipment in Egypt, and at present not being used, and so to secure aid to those wounded who were dying for want of attention.—Mr. TENNANT answered: Yes, sir. Aid was offered as soon as it was realised that aid was wanted.

Mr. GWYNNE asked the Secretary for India whether offers of hospital supplies for Mesopotamia were made by hospital supply depôts three months ago to the proper authorities, which offers were renewed from time to time, but were refused on the plea of sufficiency and that India had more than enough for all eventualities.—Mr. CHAMBERLAIN wrote in reply: The Government of India are responsible for the equipment of all forces coming from India, the War Office for those coming from Europe. Supply is arranged by the Government of India in communication with the India Office or the War Office, according to the nature of the supply.

Venereal Disease in Army in Egypt.

Colonel LOCKWOOD asked the Under Secretary for War to state how the recent figures given regarding admission ratio per 1000 for venereal disease in Egypt compare with the years 1913, 1914, and 1915.—Mr. TENNANT replied: The annual admission ratio per 1000 of strength for the years mentioned was: 1912, 110·8; 1913, 117·7; 1914 (first eight months), 140·4. I gave my honourable and gallant friend the figure 46·8 per 1000 for the eight weeks ending March 20th, 1916. The figures for 1915 are not available.

Payments for Examining Recruits.

On the third reading of the Consolidated Fund (No. 3) Bill, Mr. KENDALL called attention to the remuneration paid to medical men for examining recruits. During the time of the Derby campaign some medical men worked 16 hours a day and dealt with as many as 200 or 300 recruits a day. It was unfair that the rate of remuneration should have been only £2 a day, the same as was paid to medical men who only worked for six hours and examined 40 recruits.—Mr. H. FORSTER (Financial Secretary to the War Office) said that the instructions issued by the War Office as to the amount of work that should be done in a day were directed to get some real kind of medical examination. The medical authorities at the War Office were consulted as to the number of men who might reasonably be examined with some searching care in the course of six hours. The reply of the medical authorities was that a medical man might be properly expected to examine something like 40 men. The War Office did not want excessive numbers to be examined at a time. It became clear when the great rush of recruits came that a medical examination on the latter lines was so rushed as to be imperfect and worthless. Such hurried examinations had to be done over again. In the last days of the Derby rush there was no question of losing recruits. The men having been registered could subsequently be called up for medical examination.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

BAKER, MADELEINE STUART, M.D., B.Ch., B.A.O. Dub., has been appointed Deputy Acting School Medical Officer for the Bristol Education Committee.

LAM, PING WING, M.B., Ch.B. Edin., has been appointed Resident Medical Officer to the Leicester Board of Guardians.

PEACHELL, GEORGE ERNEST, M.D., B.S Lond., L.R.C.P., M.R.C.S., has been appointed Medical Superintendent at the Dorset County Asylum.

ROBERTS, H. S. W., L.R.C.P. & S. Edin., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Ballindalloch District of the county of Banff.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

When the application of a Belgian medical man would be considered the advertisers are requested to communicate with the Editor.

BELGRAVE HOSPITAL FOR CHILDREN, Clapham-road, S.W.—Resident Medical Officer for six months. Salary at rate of £100 per annum, with board, residence, and washing.

BIRMINGHAM AND MIDLAND EYE HOSPITAL, Church-street.—Resident Surgeon.

BOLTON INFIRMARY AND DISPENSARY.—Female Second House Surgeon and Female Third House Surgeon. Salary £200 and £180 per annum respectively, with apartments, board, and attendance.

BRISTOL GENERAL HOSPITAL.—Casualty House Surgeon. Also House Physician. Both for six or three months. Salary at rate of £175 per annum each, with board, residence, &c.

BRISTOL ROYAL INFIRMARY.—House Physicians and House Surgeons. Salary at rate of £120 per annum, with board, apartments, and laundry.

BURNLEY, VICTORIA HOSPITAL.—Female House Surgeon. Salary £160 per annum, with residence, board, and washing.

CHARING CROSS HOSPITAL.—Resident Medical Officer.

CHESTERFIELD AND NORTH DERBYSHIRE HOSPITAL.—Second House Surgeon. Salary £150 per annum, with board, apartments, and laundry.

DORSET COUNTY COUNCIL.—Temporary Female Assistant Medical Officer. Salary at rate of £300 per annum.

DUDLEY, GUEST HOSPITAL.—Assistant House Surgeon for six months. Salary £120 per annum, with board, residence, and washing.

DURHAM COUNTY HOSPITAL.—House Surgeon. Salary £150 per annum, with board, lodging, &c.

EAST HAM COUNTY BOROUGH EDUCATION COMMITTEE.—Temporary Female Assistant School Medical Officer. Salary £300 per annum.

EXETER, ROYAL DEVON AND EXETER HOSPITAL.—Senior House Surgeon. Salary at rate of £250 per annum, with board, apartments, and washing.

GLASGOW, ROYAL SAMARITAN HOSPITAL FOR WOMEN.—Female Muirhead Scholarship for Clinical and Pathological Research. Value £50 per annum. Also Pathologist.

GREAT NORTHERN CENTRAL HOSPITAL, Holloway-road, N.—House Physician for six months. Salary at rate of £100 per annum, with board, residence, and laundry.

GUILDFORD, ROYAL SURREY COUNTY HOSPITAL.—House Surgeon. Salary £150 per annum, with board, residence, and laundry.

HALIFAX COUNTY BOROUGH EDUCATION COMMITTEE.—Assistant Medical Officer. Salary £350 per annum.

HUDDERSFIELD ROYAL INFIRMARY.—Junior House Surgeon. Salary £100 per annum, with board, residence, and laundry.

LONDON HOMŒOPATHIC HOSPITAL, Great Ormond-street, W.C.—House Surgeon. Also Two Resident Medical Officers. Salary at rate of £100 per annum, with board, apartments, and laundry.

LONDON TEMPERANCE HOSPITAL, Hampstead-road, N.W.—Assistant House Surgeon for six months. Salary at rate of 120 guineas per annum.

LEEDS PUBLIC DISPENSARY.—Female Resident Medical Officer. Salary £130 per annum, with board, residence, and laundry.

MANCHESTER CHILDREN'S HOSPITAL, Pendlebury, near Manchester.—Two Female Resident Medical Officers for six months. Salary at rate of £100 per annum.

NEW HOSPITAL FOR WOMEN, Euston-road, N.W.—Female Radiographer. Salary £30 per annum. Also Female Assistant Pathologist. Salary £100 per annum. Also Female Senior Clinical Assistant to Out-patient Department.

NORWICH, NORFOLK AND NORWICH HOSPITAL.—House Physician. Salary £400 per annum, with board, residence, and laundry.

PUTNEY HOSPITAL, Putney Common, S.W.—Resident Medical Officer. Salary £150 per annum, with rooms, board, and laundry.

QUEEN'S HOSPITAL FOR CHILDREN, Hackney-road, Bethnal Green, E.—House Surgeons for six months. Salary £100 per annum, with board, residence, and washing. Also Temporary Medical Officer. Attendance once a week. £12 10s. per annum to cover travelling expenses.

ROCHESTER, ST BARTHOLOMEW'S HOSPITAL, Kent.—Senior Resident House Surgeon. Salary at rate of £300 per annum.

ROYAL FREE HOSPITAL, Gray's Inn-road, W.C.—Male and Female House Physicians and House Surgeons for six months. Salary £50 per annum, with board, lodging, and washing.

SALISBURY GENERAL INFIRMARY.—House Surgeon and Assistant House Surgeon. Salary £150 and £100 per annum respectively, with apartments, board, lodging, and washing.

SHEFFIELD ROYAL INFIRMARY.—House Surgeon. Salary £100 per annum, with board and residence.

SOUTHAMPTON FREE EYE HOSPITAL.—House Surgeon. Salary £100 per annum, with board, lodging, and laundry.

THROAT HOSPITAL, Golden-square W.—Honorary Medical Registrar.

WESTMORLAND CONSUMPTION SANATORIUM AND HOME, Grange-over-Sands.—Second Assistant. Salary £200 per annum, with apartments, board, and laundry.

WOUNDED ALLIES RELIEF COMMITTEE, Sardinia House, Kingsway, W.C.—Assistant Surgeon for British Hospital in France for French Wounded. Salary 5 guineas a week.

THE Chief Inspector of Factories, Home Office, London, S.W., gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at Newport, in the county of Mayo; and at East Grinstead, in the county of Sussex.

Births, Marriages, and Deaths.

BIRTHS.

BLOOD.—On March 23rd, at Brynland-avenue, Bishopston, Bristol, to Dr. and Mrs. B. N. Blood, a daughter.

HARE.—On March 22nd, at the Imperial Nursing Home, Cheltenham, the wife of Captain Theodore Hare, R.A.M.C., of a son.

LAMPLOUGH.—On March 25th, at Bredon, Alverstoke, the wife of Wharram H. Lamplough, M.D. Durh., temporary R.A.M.C., of a daughter.

MARRIAGES.

ASPLEN—O'DONNELL.—On March 15th, at St. Stephen's Church, Cheltenham, William Reginald Ward Asplen, Lieutenant, R.A.M.C., to Kate Norah, only daughter of the late Colonel A. C. O'Donnell, Indian Army, and Mrs. O'Donnell, of Maryville, Tivoli-road, Cheltenham.

OWEN—BOND.—On March 20th, at the Pro-Cathedral, Clifton, Ambrose W. Owen, M.D., B.S. Lond., late temporary Lieutenant, R.A.M.C., of Porth, Glam., to Beatrice Nina Bond, of Bridgwater, Somerset.

WAUGH—PICKERSGILL.—On March 27th, at Christ Church, Sunderland, William Grant Waugh, Captain, R.A.M.C., to Enid, only daughter of the late Charles Pickersgill and Mrs. Pickersgill, of The Elms North, Sunderland.

WHITE—MACKLIN.—On March 1st, at the British Legation, Teheran, Persia, Henry White, M.R.C.S., L.R.C.P. Lond., to Alice Martha, eldest daughter of Mr. and Mrs. Alfred Charles Macklin, of Ingleside, Wickham-road, Brockley, Kent.

DEATHS.

HARPER.—On March 24th, at Rosary-gardens, South Kensington, James Harper, M.D. Lond., Colonel, R.A.M.C. (T.), aged 58 years.

HEBBERT.—On March 19th, of relapsing fever, in Mesopotamia, Robert Francis Hebbert, Captain, I.M.S., aged 33 years.

PRICE.—On March 29th, at Hooper's Hill House, Margate, William Price, M.D., last surviving son of David Price, M.D., of Margate, aged 79 years.

N.B.—A fee of 5s. is charged for the Insertion of Notices of Births, Marriages, and Deaths.

BOOKS, ETC., RECEIVED.

ADLARD AND SON, London.
Cleft Palate and Hare-Lip. By Sir W. Arbuthnot Lane, Bart., M.S., F.R.C.S. Third edition. Price 10s.

CHURCHILL, J. AND A., London.
A Handbook of Colloid Chemistry. By Dr. Wolfgang Ostwald (Leipzig). Translated from the third German edition by Dr. Martin H. Fischer (Cincinnati), with the assistance of R. E. Vesper, Ph.D., and L. Berman, M.D. Price 12s. 6d. net.

LEWIS, H. K., London.
The Adolescent Period. By Louis Starr, M.D., LL.D. Price 4s. 6d. net.

MALOINE, A., ET FILS, 27, Rue de l'Ecole de Médecine, Paris.
La Gangrène Gazeuse et les Plaies Gangréneuses. Par les Drs. P. Moiroud et H. Vignes. Premier fascicule. Price 1.60fr.

OCEANA PRESS, Calle Chile, 525, Buenos Aires
Anatomia de los Conductos Biliares y de la Arteria Cistica. By Dr. Pedro Belou, Professor Titular de Anatomia Descriptiva de la Facultad de Ciencias Médicus de Buenos Aires.

Notes, Short Comments, and Answers to Correspondents.

THE VITAL STATISTICS OF THE LEEWARD ISLANDS.

IN his report for the year 1914-15 Mr. T. A. V. Best, the Colonial Secretary of the Leeward Islands of the West Indies (Antigua, St. Kitts-Nevis, Dominica, Montserrat, and the Virgin Islands), states that the total population of the colony, according to the last Census, was 127,193. The general health of the inhabitants during the year was good. The total number of patients admitted into the hospitals of the colony was 3713, as against 3827 in the previous year, whilst the number of deaths was only 266, as against 354. In the Leper Asylum at Antigua there were 39 lepers. The central lunatic asylum had 128 patients. The Alexandra Cottage Home for Incurables, Dominica, maintained on an average 10 paupers. In the Yaws Hospital at St. Kitts 177 patients were treated, all of whom were discharged as cured. Treatment had to be suspended and the ward closed for a time, as salvarsan, being a German preparation, was not procurable. The average rainfall from January to December, 1914, on 72 stations in Antigua was 36·86 inches, or 7·39 inches below the average of the 40 preceding years. The highest maximum temperature was 91° F. on Oct. 27th and Nov. 8th, and the lowest minimum temperature 66° on Jan. 7th. Three shocks of earthquake were recorded.

THE PUBLIC SCHOOLS YEAR BOOK.

THE twenty-seventh annual issue of this useful guide, edited by H. F. W. Deane, M.A., F.S.A., and W. A. Bulkeley Evans, M.A. (London: The Year Book Press, 31, Museum-street, W.C. Pp. 767. Price 5s. net) contains in a form handy for reference information relative to the governing bodies, staff, nomination and admission, entrance examination and scholarships, houses and dormitories, organisation and instruction, fees, charges, and prizes at the public schools, and details of the entrance examinations to the Universities. The conditions of admission to the Civil Service and other professions are included, and the sections devoted to the navy and army give the new regulations for temporary and permanent commissions. A list of preparatory schools, a public schools, bibliography, and short articles on the various professions are other useful features of the work. As the official reference book of the headmasters' conference it summarises the work of the committee of this conference. An invaluable work of reference for parents.

CHILDREN'S COUNTRY HOLIDAYS FUND.

Mr. Francis Morris, chairman of the Executive Committee, writes to say that the work of the Children's Country Holidays Fund is being carried on despite the war, and that donations are needed in order to send away the 18,000 to 20,000 children with whom it is hoped to deal this year. Efforts are being made to seek out the most ailing children in the elementary schools of London in order to provide them with a summer fortnight in country cottages. This work should appeal to all who have at heart the welfare of the growing generation.

HEALTH OF MAURITIUS.

A CORRESPONDENT writes:—In connexion with your note last week on the public health of Mauritius attention may be drawn to the meteorological observations taken at the Royal Alfred Observatory, Pamplemousses, and at nine second-order stations. The observatory is about three miles from the West Coast, and is 179 feet above sea level. There are considerable variations both in temperature and humidity in the different parts of the island, the coast districts being hotter and drier than the higher altitudes in the interior. Hurricanes occur between December and April, which is the hottest season. The mean rainfall at 49 stations was 59·10 inches as compared with 75·83 inches in 1913 and an average of 74·94 inches. Heavy rains, relatively to the normal, fell in February and June. The rainfall at the observatory was below normal, being 43·12 inches as compared with a normal of 47·95 inches, and the number of rainy days recorded was 215, as compared with an average of 204, a "rainy day" being one in which ·005 inch or more of rain was measured. The mean temperature of the air at the observatory was 73·7° F. as compared with an average of 73·4°, the highest temperature recorded being 89·9° on March 10th, and the lowest 54° on July 23rd. The highest and lowest temperatures recorded at the observatory between 1875 and 1914 were 94·7° on Dec. 23rd, 1900, and 49·9° on August 8th, 1907. From February to September the temperature remained generally above normal, falling to below normal in the last quarter of the year.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street. W.

MEETINGS OF SECTIONS.

Friday, April 7th.

LARYNGOLOGY (Hon. Secretaries—Cecil Graham, Frank Rose): at 4 P.M.

Dr. L. H. Pegler: Case of Laryngeal Tuberculosis.

Mr. E. D. D. Davis: (1) Report of a Case of Laryngeal Crises, with Abductor Paralysis (Sections of the Brain, Spinal Cord, and Vagus Nerves will be demonstrated); (2) Laryngeal Stenosis following a Bayonet Wound treated by Intubation.

Mr. Herbert Tilley: Cases illustrating Results of Intranasal Operation for Chronic Frontal Sinusitis.

Dr. James Donelan: Case of Paralysis of Left Vocal Cord in a Young Woman.

Dr. Jobson Horne: Two Cases of Suppuration in the Antrum of Highmore due to Uncommon Causes.

And other Cases.

RÖNTGEN SOCIETY, Institution of Electrical Engineers, Victoria Embankment, W.C.

TUESDAY.—8.15 P.M., General Meeting. Demonstration:—Mr. P. J. Neate:—A Chronograph constructed to Work with the Electroscope. Papers:—Mr. B. H. Morphy and Mr. S. R. Mullard: The Enclosed Tungsten Arc as a Source of Ultra Violet Light.—Mr. E. Schall: Experiments with a Coolidge Tube.—Mr. H. E. Donnithorne: A New Modification of the Ionization Method of Measuring X Rays. Exhibition of Plates showing Experiments with the Coolidge Tube in Radiography, conducted by Members of the Staff in the Radiographic Department at the Cancer Hospital.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY, West London Hospital, Hammersmith-road, W.

FRIDAY.—8 P.M., Special Clinical Evening.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East.

TUESDAY AND THURSDAY—5 P.M., Lumleian Lectures:—Dr. F. E. Batten: Acute Poliomyelitis. (Lectures II. and III.)

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.

Course of Lectures on the Anatomy of the Human Body, for First-aid and Ambulance Students (open to all members of ambulance companies and first-aid classes):—

MONDAY, WEDNESDAY, AND FRIDAY.—5.30 P.M., Prof. A. Keith. 4 P.M. to 7 P.M., Exhibition of Anatomical Preparations and Specimens in the Theatre on lecture days, and between 10 A.M. and 5 P.M. in the Hall of the Museum on the following day.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye. Dr. Simson: Diseases of Women.

TUESDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Addison: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations. Dr. Simson: Diseases of Women.

THURSDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye.

FRIDAY.—10 A.M., Dr. Simson: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Addison: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Eye Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY.—Clinics:—10.30 A.M., Surgical Out-patients (Mr. E. Gillespie). 2.30 P.M., Medical Out-patients (Dr. T. R. Whipham): Gynæcological Out-patients (Dr. Banister). 3 P.M., Medical In patients (Dr. R. M. Leslie).

TUESDAY.—2.30 P.M., Surgical Operations (Mr. Carson). Clinics:—Medical Out-patients (Dr. A. G. Auld); Surgical Out patients (Mr. Howell Evans); Nose, Throat, and Ear Out-patients (Mr. C. H. Hayton). Radiography (Dr. Metcalfe). 3.30 P.M., Medical In-patients (Dr. A. J. Whiting).

WEDNESDAY.—Clinics:—2.30 P.M., Throat Operations (Mr. C. H. Hayton). Children Out-patients (Dr. T. R. Whipham); Eye Out-patients (Mr. R. P. Brooks); Skin Out-patients (Dr. H. W. Barber). 5.30 P.M., Eye Operations (Mr. R. P. Brooks).

THURSDAY.—2.30 P.M., Gynæcological Operations (Dr. A. E. Giles). Clinics:—Medical Out-patients (Dr. A. J. Whiting); Surgical Out-patients (Mr. Carson); Radiography (Dr. Metcalfe). 3 P.M., Medical In patients (Dr. R. M. Leslie).

FRIDAY.—2.30 P.M., Surgical Operations (Mr. Howell Evans). Clinics:—Medical Out-patients (Dr. A. G. Auld); Surgical Out-patients (Mr. E. Gillespie); Eye Out-patients (Mr. R. P. Brooks).

THE THROAT HOSPITAL, Golden square, W.

MONDAY.—5.15 P.M., Special Demonstration of Selected Cases.

THURSDAY.—5.15 P.M., Clinical Lecture.

For further particulars of the above Lectures, &c., see Advertisement Pages.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, March 29th, 1916.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks
Mar. 23	29·546	N.E.	...	58	38	33	32	33	Raining
,, 24	29·410	N.E.	0·01	71	44	33	33	35	Cloudy
,, 25	29·620	S.W.	...	90	45	33	37	38	Cloudy
,, 26	29·410	W.	0·05	95	49	35	35	40	Fine
,, 27	29·520	W.	0·16	83	49	35	36	39	Fine
,, 28	28·910	S.	0·87	66	43	35	40	41	Raining
,, 29	29 920	N.W.	0·23	85	45	32	32	34	Snowing

The following magazines, journals, &c., have been received:—

American Journal of Surgery, American Journal of Roentgenology, Canadian Practitioner and Review, Proceedings of the Royal Society of Medicine, Pacific Medical Journal, Interstate Medical Journal, Indian Medical Record, Calcutta Medical Journal, Royal London Ophthalmic Hospital Reports, &c.

EDITORIAL NOTICES.

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITOR," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention should be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, *and when accompanied by blocks it is requested that the name of the author, and if possible of the article, should be written on the blocks to facilitate identification.*

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

We cannot prescribe or recommend practitioners.

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

Letters relating to the publication, sale, and advertising departments of THE LANCET should be addressed "To the Manager."

We cannot undertake to return MSS. not used.

MANAGER'S NOTICES.

TO SUBSCRIBERS.

WILL Subscribers please note that only those subscriptions which are sent direct to the Proprietors of THE LANCET at their Offices, 423, Strand, London, W.C., are dealt with by them? Subscriptions paid to London or to local newsagents (with none of whom have the Proprietors any connexion whatever) do not reach THE LANCET Offices, and consequently inquiries concerning missing copies, &c., should be sent to the Agent to whom the subscription is paid, and *not* to THE LANCET Offices.

Subscribers, by sending their subscriptions direct to THE LANCET Offices, will ensure regularity in the despatch of their Journals and an earlier delivery than the majority of Agents are able to effect.

THE COLONIAL AND FOREIGN EDITION (printed on thin paper) is published in time to catch the weekly Friday mails to all parts of the world.

ALTERATION OF INLAND SUBSCRIPTION RATES.

OWING to the alteration in the Inland Newspaper Postal rate, the postage on each copy of THE LANCET will in future be 1*d.*, and sometimes 1½*d.*

The revised Inland Subscription rates are:—

One Year	£1 3 3
Six Months	0 13 8
Three Months	0 7 0

The rates for the Colonies and Abroad (thin paper edition) will be as usual:—

One Year	£1 5 0
Six Months	0 14 0
Three Months	0 7 0

Subscriptions (which may commence at any time) are payable in advance. Cheques and Post Office Orders (crossed "London County and Westminster Bank, Covent Garden Branch") should be made payable to the Manager, Mr. CHARLES GOOD, THE LANCET Offices, 423, Strand, London, W.C.

TO COLONIAL AND FOREIGN SUBSCRIBERS.

Subscribers abroad are particularly requested to note the rates of subscriptions given above.

The Manager will be pleased to forward copies direct from the Offices to places abroad at the above rates, whatever be the weight of any of the copies so supplied.

NEWSPAPERS FOR NEUTRAL COUNTRIES.

Newspapers are not at present being sent forward to neutral European countries unless posted direct from the office of publishers or newsagents who have obtained permission from the War Office for this purpose. The Publisher of THE LANCET has obtained the required permission, and he will forward copies direct from the Office to any neutral country on receipt of instructions.

ADVERTISEMENT RATES.

Books and Publications ... ... } Five lines and under ... ... 4s. 0d.
Official and General Announcements } Five lines and under ... ... 4s. 0d.
Trade and Miscellaneous Advertisements and Situations Vacant ... ... } Five lines and under ... ... 4s. 0d.

Every additional line, 6d.

Situations Wanted: First 30 words, 2s. 6d.

Per additional 8 words, 6d.

Quarter Page, £1 10s. Half a Page, £2 15s.

Entire Page, £5 5s.

Special terms for Position Pages.

Advertisements (to ensure insertion the same week) should be delivered at the Office not later than Wednesday, accompanied by a remittance.

Communications, Letters, &c., have been received from—

A.—Messrs. Allen and Hanburys, Lond.; Dr. Donald Armour, Lond.; Messrs. Arnold and Sons, Lond.; Anglo-American Pharmaceutical Co., Croydon; Messrs. Adlard and Son and West and Newman, Lond.; Agency of the University Libraries, Lond. Secretary of; Sir Clifford Allbutt, K.C.B., Cambridge; Mr. F. Coltman Allen, Stourbridge.

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Z.—Dr. Carlo Zucchetti, Italy.

Letters, each with enclosure, are also acknowledged from—

A.—Mr. H. Arnold, Lond.; A. I. A.; Ardath Tobacco Co., Lond.

B.—Messrs. Jonas Browne and Son, Lond.; Messrs. Burroughs Wellcome and Co., Lond.; Birmingham and Midland Eye Hospital, Secretary of; Bethlem Royal Hospital, Lond., Secretary of; Dr. L. J. J. Barnes, Erith; Messrs. F. P. Baker and Co., Lond.

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A Report
ON
THE USE OF STOCK VACCINE IN INFECTION BY THE BACILLUS TYPHOSUS.
WITH AN ANALYSIS OF 230 CASES.

BY T. H. WHITTINGTON, M.D. LOND.,
CAPTAIN, R.A.M.C. (T.C.)

THE 230 cases under consideration were in hospital during the winter 1914–15. Half the cases were in my medical charge, the remainder being in the wards of Major D. P. Johnstone, Captain J. A. Torrens, Captain G. D. H. Wallace, and other medical officers. Careful notes were taken and a summary of each case was made at its termination by the particular medical officer, and I am much indebted to them.

Methods Adopted in the Investigation.

The notes of the cases were made on the same plan, which was carried out with various modifications by the other officers. At the end of the winter, with the cases fresh in mind, an analysis was made of my series. About 500 cases of the enteric group have now passed through my wards, and after this additional clinical experience an attempt has been made to judge the effects of vaccine and to reconsider all the typhoid cases which have had this treatment.

To be certain of the effects of vaccine in any particular case is a difficult matter, as mere impressions in isolated cases often prove false. Vaccine given to a patient in the hope that it will do good is liable to get the credit of his excellent recovery, when there is no actual proof that he would not have done equally well without it. How, then, is one to judge the effects? It is obvious that even if a scientifically accurate method were available carefully selected controls are necessary, and that impressions have to be checked by a comparison between the vaccinated cases and the unvaccinated controls, and that *groups* of the same kind of case should be compared with other control groups.

Altogether 176 cases have had vaccine treatment. The cases now considered number 230; half of these were on vaccine treatment and the other 115 are the selected controls. To make a just comparison between the two sets of cases has been the object of this investigation. The analysis of the cases incidentally shows what were the usual course and complications of the disease among the soldiers in this hospital during the winter 1914–15.

The selection of the cases.—In order that cases of typhoid may be rightly compared they must conform to certain standards. It was by a rigid conformity to these standards that the cases were reduced in number to 230. First, it must be certain that all the cases are *true* typhoid and not merely due to one or other of the three organisms of the enteric group. For this reason neither the expression "typhoid fever" nor "enteric fever" was used in the title of this paper, as both these terms are often applied clinically to any case of the enteric group. Paratyphoid is, in the great majority of cases, a much milder disease than typhoid, the average prognosis being better in every way and the death-rate much lower.[1] In the early days of this hospital there had not been time or material to put the laboratory into proper working order. Many cases, therefore, were considered "typhoid fever" on clinical grounds or after the isolation from them of a Gram-negative motile bacillus which did not ferment lactose. Several such cases were treated with vaccine, and, making a good and rapid recovery, were considered at the time good results for this treatment. Further investigation of the organisms from some of these patients proved that the disease had been paratyphoid, and, as one came to recognise the usual course of this disease it was seen that these so-called good results were fallacies (see Case 0).

It is with this memory of some of our earlier mistakes that I place the bacteriological proof of the cases as the first essential. The hospital has been most fortunate in having several bacteriologists thoroughly acquainted with the bacilli of the enteric group. It is especially due to the work of Captain J. L. Wood, R.A.M.C., and of Captain W. H. Tytler, C.A.M.C., that the cultures of the organisms obtained from the cases are now in the laboratory, each indexed with a full account of their reactions and of the stringent standards to which they had to conform before being finally named. An analysis would have been useless without this sure foundation of the accurate bacteriological diagnosis of the cases. Of the 230 cases, 205 had the bacillus typhosus isolated from them. Of these, 177 were isolated from the blood stream, 20 from the stools, and 8 from the urine. In 43 of the fatal cases a post-mortem examination was made, and in 26 of the cases B. typhosus was isolated from the gall-bladder, and in 8 from the spleen. The remaining 25 cases, from which the organism was not isolated, were identified by the fact that their serum agglutinated B. typhosus before vaccine was given, and as all were uninoculated this seems sufficient. All cases in which the laboratory evidence was incomplete or equivocal or suggested a double infection have been excluded. Cases sent in as bacteriologically diagnosed "enteric" or "typhoid" are not necessarily included, as often all that was meant was that one of the organisms of the enteric series had been isolated.

The state of inoculation complicates the question of typhoid among soldiers. One cannot properly compare the effect of vaccine in unprotected cases with that in cases which already have had some variable amount of protection given them by the use of the same vaccine. Also serious cases are rare among inoculated men, and thus only a few inoculated cases have been treated by vaccine at this hospital. For these reasons I have paid special attention to the uninoculated cases. Of the series, 200 are of this kind—100 treated with vaccine and 100 unvaccinated controls. A few cases have been included in which the protective inoculation was given during the apparent onset of the disease (Case 164).

The varying severity of the disease in individuals and the fact that some cases come under treatment late and others early in the course of their fever make comparisons difficult. In analysing the cases I have divided them into classes according to their apparent severity at the time of admission and into groups according to the prognosis. Similar classes and groups of cases can then be compared according as they have or have not been on vaccine treatment. It is well known that typhoid varies not only in its incidence but also in its severity according to the year and season of the year, the climate and

[1] Torrens and Whittington: The Clinical Aspects of Paratyphoid Fever, Brit. Med. Jour., Nov. 13th, 1915, and Journal of the R.A.M.C., October, 1915.

locality, and the age and sex, and that the incidence of the complications is much affected by these factors. To judge the results of a method of treatment of any infectious disease, but especially of typhoid, the above conditions should be constant. The cases now considered occurred between November and May, the great majority during the months of December to March inclusive. They came from the comparatively small area occupied at the time by the troops of the Expeditionary Force. Finally, the patients all being soldiers, age and previous health were fairly constant. In this connexion it should be remembered that lack of care early in the disease increases the severity and mortality rate.

To sum up, in judging the effect of vaccine in typhoid cases I have tried to be certain of the following essentials (without which results will be fallacious): 1. Proof of infection by B. typhosus in all the cases, including the controls. 2. Accurate selection of these control cases—that is, (*a*) as far as possible the classes of cases and groups of cases compared are of the same degree of severity; (*b*) there is the same state (or lack) of inoculation in the cases compared; (*c*) all the cases occurred in the same season of the year and in the same climate and locality; (*d*) all were of the same sex and of about the same age and previous health; and (*e*) other modes of treatment (nursing, dieting, &c.) were similar.

Clinical grouping of the cases.—The classes referred to, into which the 230 cases were divided, varied according to the apparent condition of the patient on admission or after a day or two of observation, each class of vaccinated cases having a control class of the same size. It should be noted that the final result of the case was not taken into account, but the state of the case before treatment was started. I will briefly explain the method of this classification. A flushed, drowsy patient obviously ill is said to be looking "toxic" (Cases 8, 112, 162, &c.), and this expression is used by all the medical officers in describing their cases. For instance, a patient who has a typical typhoid aspect with a sallow, muddy complexion and malar flush, who is lying inert on his back, mentally fuddled or delirious and looking obviously poisoned, is described as "very toxic," whereas an alert mentally clear man merely looking slightly febrile is described as "quite non-toxic." The severity of the case usually, but by no means always, varies directly with the degree of toxæmia thus evident. In judging the severity the following points were especially considered: (*a*) The rate and type of the pulse; (*b*) the amount of pulmonary involvement; (*c*) the temperature; (*d*) the amount of distension; and (*e*) the day of the disease. The day of disease is counted from the day which appeared by the previous history to be the first day of illness. On these lines the 230 cases were divided into—

Class 1 ...	32	cases,	very severe and very toxic.
,, 2 ...	86	,,	severe and toxic.
,, 3 ...	56	,,	of moderate severity.
,, 4 ...	44	,,	moderately severe, but quite non-toxic.
,, 5 ...	12	,,	mild.

The vaccine and dosage.—The vaccine used (with 4 exceptions) was the stock army vaccine, made up for treatment purposes in the dilution of 250 millions to the c.c. The other 4 cases had a sensitised vaccine. The initial dose, the interval between the doses, and the rate of increase of the dose were all the subject of careful trial. In many of the earlier cases I had the great benefit of Sir William Leishman's advice and guidance. A small initial dose of 80–100 millions was tried in certain cases, but this did not seem sufficiently strong. There were some patients who had received their first inoculation during or immediately before the apparent onset of the disease (Case 164), and who were therefore considered to have had a big dose of vaccine (500 or 1000 millions) early in their attack. Some of these patients did unusually well, and therefore a similar big initial dose was tried in other cases (Case 162). Also these and other cases seemed to support the view that the sooner the vaccine was given the better was its chance of doing good, but later there were some cases of this variety which did badly. At one time we had the impression that it was very important to inject vaccine early, but perhaps this was due to the obvious fact that the sooner any case comes under ordinary treatment (bed, nursing, and dieting) the better chance has that patient of doing well. Eventually a first dose of 200–250 millions was usually given as a routine, and subsequent doses were usually injected at intervals of 2–3 days, rising by about 100–200 millions each time to 500 or 600 millions. The time of day for injection was varied. In nearly all cases I gave my patients their injections between 5 and 7.30 P.M. —i.e., when the temperature was usually rising. The other medical officers gave the injections during the morning when the temperature was down or falling. It was thought that as there is frequently a decided difference in the temperature and state of the patient as observed in the morning and in the evening, the time of day might be important, but the result did not support this view. It seemed both impossible and unwise to keep to any strict rule, and the system of dosage varied much with the individual case. If there was much local reaction or if there appeared to be a marked general reaction there was no increase of dose, or the increase was more gradual. Also if there was no local reaction and apparently no general reaction a bigger dose was often given the next day.

To be certain that a general reaction to the vaccine has occurred at any particular time in the course of a case is most difficult. All the medical officers here, after observing a large number of cases, eventually came to the conclusion that the temperature chart was a fallacious guide to the effect of any particular dose. In this matter I am unable to follow those who have described cases of typhoid in which rises and falls in the temperature were stated with assurance to have been due to the vaccine. Many of the control cases would have been considered good results for vaccine had they received it (Case 23).

Results in the Whole Series.

The total *mortality* in the 230 cases (115 vaccinated, 115 selected controls) was 52 (22·6 per cent.), this being made up by 29 deaths in the vaccinated cases (25 per cent.) and 23 deaths in the unvaccinated (20 per cent.).

The average *length of the primary period of pyrexia* (neglecting fatal cases) was 27·5 days. The average date on which the temperature settled was the twenty-ninth day in the vaccinated cases and the twenty-sixth day in the controls.

The total number of cases having a *relapse* was 22 (9·5 per cent.), and of these 12 occurred among the vaccinated and 10 among the unvaccinated. In this investigation a relapse was taken to mean a rise of temperature lasting several days during which there was some recurrence of the previous

typhoid symptoms and signs. Rises of temperature due only to a complication or sequela are not included.

The total number of patients with *complications or sequelæ* of some kind or another was 111, and of these 58 were among those who had vaccine and 53 among the unvaccinated. The more important of these complications were distributed as follows:—

Total 230 cases.		Vaccinated.	Controls.
Hæmorrhage	30 (13%)	17 (14·7%)	13 (11·2%).
Perforation	7 (3%)	5 (4·3%)	2 (1·7%).
Thrombosis and phlebitis	7 (3%)	4 (3·4%)	3 (2·6%).
Severe post-typhoid debility or prolonged convalescence	33 (14%)	19 (15·7%)	14 (12%).

"Hæmorrhage" does not include the fairly numerous cases in which only streaks of blood or minute quantities were present in the stools. Hæmorrhage from the bowel was the cause of death or the deciding factor in 6 of the fatal vaccinated cases and in 5 of the controls. It was noted that in some of the cases the hæmorrhage started just after a dose of vaccine or recurred after a dose (see Cases 162 and 164). Such cases may have been coincidences, like many other things, good and bad, which occur during vaccine treatment. There is, however, the possibility that after a dose of vaccine greater inflammatory reaction may occur in the ulcerated Peyer's patches, and the increase in the local blood pressure then occurring at these spots may be the decisive cause of the bleeding.

Pulmonary involvement and *meteorism* are not in the above list as, except in the mildest cases, there is always more or less chest trouble and more or less abdominal distension and it has seemed difficult to say at what stage conditions so frequently present become complications and are no longer to be considered part of the usual course of the disease. It seems certain, however, that vaccine has no power to prevent or to produce them, or to diminish them when present except in so far as it may affect the general health of the patient. The presence or absence of these conditions was always carefully noted in attempting to judge the effect of vaccine, and the vaccine rarely seemed to have any good effect in cases with much bronchitis or bronchopneumonia.

Note.—It must be remembered that (*a*) this high death-rate is the rate for a particular set of picked cases; (*b*) that 200 of the cases were uninoculated, that they occurred during the winter months, and many of them under adverse conditions unavoidable at that time (slow evacuation to fever hospitals, &c.); and (*c*) that 177 of them had B. typhosus isolated from the blood stream, and were therefore very definitely infected.

The death-rate for the hospital of the true typhoid cases was 12·4 per cent., being made up of a rate of 16·5 per cent. in the uninoculated and 8·1 per cent. in the inoculated up to November, 1915.

Results in the Uninoculated Cases.

In the 200 uninoculated cases (100 on vaccine and 100 controls) the following are the results:—

The 200 cases.		Vaccine. series.	Controls
Mortality	47	25%	22%
Average length of pyrexia in days	27·5	29·4	26
Cases with relapses	19	10%	9%
Cases with complications or sequelæ	101	51	50

These results require a close analysis to show how the various types of case were affected. The classes will now be dealt with separately. (For Summary see Table I.)

Class 1. Very severe and toxic.—28 cases (14 with vaccine and 14 without).

(*a*) *Among the vaccinated cases* there were 9 deaths (64·2 per cent.) and 5 recoveries. Of the fatal cases, 5 died of toxæmia and cardiac failure with basal congestion and bronchopneumonia in varying degrees 7, 3, 11, 5, and 7 days after

TABLE I.—*200 Uninoculated Cases: Statistics of the Five Classes, with and without Vaccine, and of the total 200.*

—	Class 1.		Class 2.		Class 3.		Class 4.		Class 5.		Percentage or average in		
											Total 200.	100 on vaccine	100 no vaccine.
With (+) or without (0) vaccine	+	0	+	0	+	0	+	0	+	0		+	0
Total number in class	14	14	37	37	24	24	20	20	5	5	200	100	100
Mortality	9*a*	10	15	10	1	2	1	0	(1)	0	23·5%	25%	22%
Length (days) of primary fever	31	36	36·4	27·7	26·2	27·7	25·3	22·1	23·5	14·4	27·5	29	26
Total number of cases having one or more complications of any kind, or sequelæ	6	6	21	23	14	14	7	6	3	1	50·5%	51%	50%
Relapses	—	—	3	3	4	4	2	2	1	—	9·5	10	9
Hæmorrhage (1)	2	1	9	6	2	3	2	1	—	—	12·5	15	10
Perforation	1	0	2	2	—	—	—	—	—	—	2·5	3	2
Thrombosis	—	—	—	1*b*	—	—	1	—	—	—	1	1	1
Phlebitis	—	—	1	—	2	1	—	—	—	—	2	3	1
Slight rises of temperature in convalescence (2)	2	1	3	3	4	2	3	1	—	1	10	12	8
Tachycardia in convalescence	1	2	2	4	3	4	1	2	1	0	10	8	12
Pleurisy	—	—	1	—	1	1	—	2	—	—	2·5	2	3
Otorrhœa	—	—	1	1	—	1	—	—	—	—	1·5	1	2
Marked wasting with bedsores	—	—	3	1	—	—	—	—	—	—	2	3	1
Parotitis	—	—	1*c*	4*d*	—	—	—	—	—	—	2·5	1	4
Laryngitis (3)	—	—	1	—	1*e*	1	—	—	—	—	1·5	2	1
Other complications or sequelæ	1	4*f*	3	5*h*	1*f*	2*g*	—	2	—	1	9·5	5	14
Prolonged convalescence from severe debility and other causes not mentioned	1	2	12	11	3	0	2	0	—	—	15·5	18	13

(1) Was the cause of or was associated with death in 6 vaccinated cases and 5 unvaccinated. (2) By this is meant evanescent rises of temperature which are not relapses and which are not associated with a complication or sequela. (3) Only cases in which there were destructive changes in the larynx are included (sore-throat, &c., not necessarily included). *a*. One death in a case admitted in a dying condition. *b*. The supposed cause of a pulmonary infarct (fatal). *c*. With abscess formation. *d*. Two with abscess and two without. *e*. Ulceration followed by cicatrisation requiring tracheotomy. *f*. Temporary insanity. *g*. Tonsillitis. *h*. Includes 1 case of biliary colic and jaundice. *i*. Includes 1 case of septicæmia and endocarditis (fatal) and 1 case of glomerular nephritis (fatal).

admission respectively. These cases in this order had 2, 1, 2, 3, and 2 injections of vaccine, and I doubt if it had any influence on them at all. Of the other 4 fatal cases, 1 got steadily worse and died of perforation 11 days after admission, and vaccine possibly did harm in this case. Perforation occurred the day after the second dose. Another case became steadily worse, having two severe hæmorrhages after the injection, and died 13 days after admission, and here also vaccine possibly did harm as the case was admitted early in its course and the bleeding occurred on the tenth and eleventh days. (See Case 162.) Another case died of hæmorrhage 36 hours after admission, having arrived in a collapsed condition as a result of severe bleeding during the journey. A small dose of vaccine (100 millions) was given after he had revived, and the hæmorrhage recurred. I do not think vaccine did him harm as no form of treatment could have saved him. In the remaining fatal case the temperature came down steadily after four doses of vaccine, but at the same time the pulse-rate and the delirium were bad, the patient was in a very asthenic condition, and he died 15 days after admission of a rapidly spreading pneumonia.

CHART 1 (Case 112).

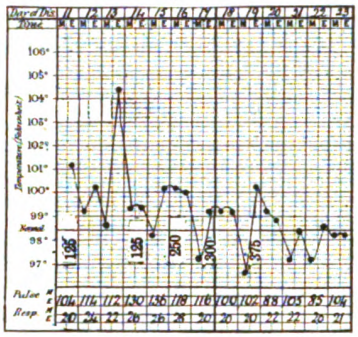
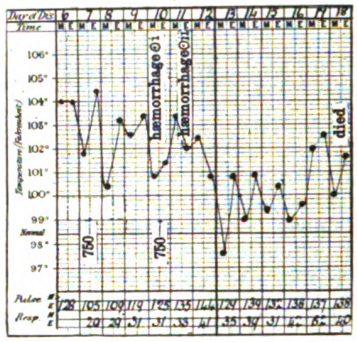
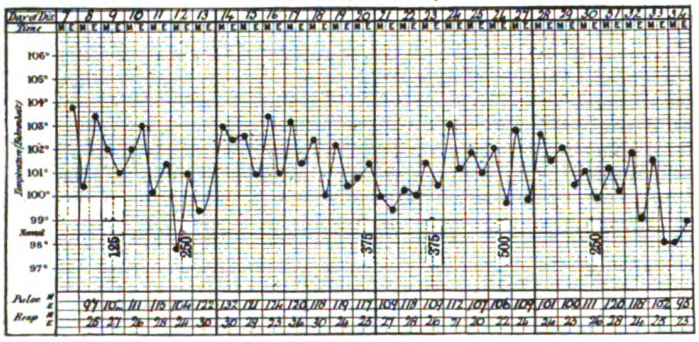


CHART 2 (Case 162).



Of the 5 survivors, in one vaccine certainly appeared to do good. This case is shown, and is one of those in which the temperature is no guide to the effect of vaccine (Case 112). In another the patient did not look as if he were going to pull through during his second week, but he began to get better after the third dose, and finally reached a normal temperature on the twenty-fourth day, which was rather soon considering the severity of the case. I think vaccine may have benefited him. The other 3 cases all ran a severe and long course, and all got rather worse after the first two or three doses of vaccine, and except for the fact that they did survive there is no reason to suppose that vaccine had a good effect, and one had a very tedious convalescence. One of these cases is shown together with a similar control case. (Case 111 and Case 8.) The average length of the primary fever in the 5 surviving cases was 31 days.

CHART 3 (Case 111).



(*b*) *Among the unvaccinated cases* there were 10 deaths (71·4 per cent.) and 4 recoveries. Of the fatal cases 6 died of toxæmia and cardiac failure with broncho-pneumonia 8, 6, 2, 6, 16, and 13 days after admission, living on the average three days longer than the 5 similar vaccine cases. The 4 other deaths were due respectively to (α) hæmorrhage, (β) acute glomerular nephritis, (γ) acute gangrenous decubitus and septicæmia coming on 21 days after admission, and lastly (δ) toxæmia associated with facial erysipelas.

The 4 surviving unvaccinated cases were all critically ill during their course. In the end 2 did very well and had an uninterrupted convalescence, and 1 of these (Case 8) is shown with a similar case on vaccine treatment (Case 111). The average length of the primary fever in the 4 surviving cases was 36 days.

The effect of vaccine in this class may be summed up thus: In 1 case it certainly appeared to do good, and it may have done good in another. In 1 case it did not have a fair chance. In 1 case it appeared to do harm, and it possibly did harm in 2 others. In 4 it certainly did no good, and in the remaining 5 it cannot justly be said to have had an effect one way or the other. I do not think that a conclusion for or against should be drawn from a comparison of the mortality rates as the total number of cases was small, and in 2 of the non-vaccinated cases the cause of death was most unusual.

Charts.

Note.—All the cases shown are uninoculated patients unless otherwise stated. The average rates of pulse and respiration for the whole day are marked. The printed figures denote the dose of vaccine given in millions of bacilli.

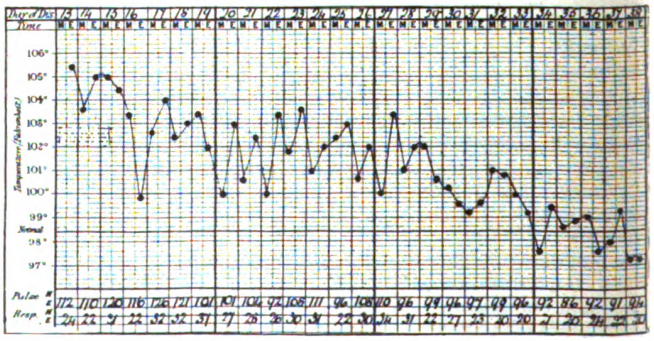
CASE 112 (Chart 1.)—On admission eleventh day: Sallow complexion with malar flush, toxic; dry furred tongue; regular pulse; abdomen distended and tender; feeble heart sounds; lungs normal. Fourteenth day: Rapid feeble pulse; bad sallow toxic look and muttering delirium. Twentieth day: Fall of temperature with profuse sweating; pulse now good; patient undistressed and sensible. Steadily improved from this day onwards.

Summary.—A very toxic severe case soon after admission (Class 1). Noticeable for quick improvement in mental symptoms and cardiac weakness. Apparently a good result for vaccine. Note entire absence of pulmonary involvement. Blood culture grew B. typhosus.

CASE 162 (Chart 2).—On admission sixth day: Flushed, lethargic, inert; typical appearance of acute toxic type with tendency to pseudo-pneumonic variety; small regular pulse; distended soft abdomen; diffuse coarse bronchitis. Blood culture grew B. typhosus. Ninth day: Voice lost; distension marked; bronchitis marked; general condition the same. Fifteenth day: Rapid poor pulse, mouth very dry, very toxic.

Summary.—A typical very severe toxic case (Class 1). Vaccine possibly did harm as patient got steadily more toxic. Pulmonary involvement became worse and he had two severe hæmorrhages in association with the injections.

CHART 4 (Case 8).



CASE 111 (Chart 3).—On admission seventh day: Pinched and flushed and looks ill, drowsy and cannot remember. Pulse regular but soft and dicrotic; tongue has dry brown

fur; abdomen full and moves badly; slight bronchitis. Blood culture grows B. typhosus. Thirteenth day: Toxic and drowsy; tongue still dry; pulse poor; more distended. Twenty-third day: Very drowsy; poor pulse, cardiac weakness the chief danger; more bronchitis. Twenty-ninth day: Poor pulse; slight but steady general improvement. Slow convalescence owing to dilated heart with rapid pulse.

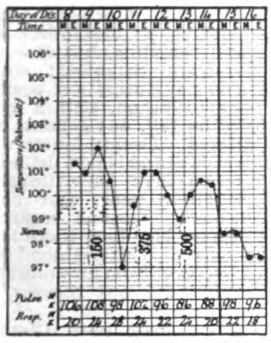
Summary.—Typical severe toxic and prolonged case (Class 1). Did not look like pulling through at one time. Vaccine not thought to have had any definite effect. Note rise in temperature and pulse-rate after second dose. Compare with Case 8.

CASE 8 (Chart 4).—On admission thirteenth day: Flushed, talks incoherently; pulse soft and thready; tongue dry and tremulous; abdomen distended and tender; much bronchitis. Blood culture grows B. typhosus. Eighteenth day: Better; bronchitis seems the chief danger. Twenty-sixth day: More toxic in appearance; stools frequent and undigested; pulse is steady and of better volume. Thirty-third day: No distension; pulse fair; does not look toxic. Slow steady improvement from now onwards.

Summary.—Very severe toxic and prolonged case (Class 1), which has done very well in the end without vaccine. Compare with Case 111.

CASE 0 (Chart A).—On admission eighth day: Looks ill and seems slightly delirious. Pulse of low tension but not dicrotic; abdomen distended and slightly tender; little or no bronchitis; spleen felt and large crop of large spots. Sent into hospital with culture from blood stated to be B. typhosus. Tenth day: Delirious; dry brown toxic tongue. Twelfth day: Improving; not delirious. Sixteenth day: Markedly improved all round; abdomen flaccid.

CHART A (Case 0).



Summary.—"A severe typical toxic case. Considered a good result for vaccine treatment, which markedly affected for the better both temperature and general condition." (Quoted from notes made at time of patient's discharge from hospital.) The culture obtained from blood was subsequently further examined and gave quite definitely all the cultural reactions of the B. paratyphosus A, and also fulfilled the agglutination and absorption tests. It is rather a characteristic of paratyphoid cases to take a sudden turn for the better a few days after admission. The supposed "good result," therefore, was a fallacy.

Class 2. Severe and toxic.—74 cases (37 treated with vaccine and 37 without).

(*a*) *Among the vaccinated cases* there were 13 deaths (35 per cent.) and 24 recoveries. In 6 of the *fatal cases* one is not justified in saying that vaccine affected the result. The causes of death in these 6 cases were as follows: Toxæmia and broncho-pneumonia in 3 cases; cellulitis and terminal septicæmia in 1 case; intestinal obstruction by adhesions resulting from a shut-off and healed perforation in 1 case; and lastly, toxæmia, with, in addition, ulceration of the vocal cords and epiglottis, in 1 case.

In 2 of the fatal cases vaccine certainly appeared to have a bad effect. In one of these (Case 159) the patient became worse in every way after four injections, and died on the seventeenth day after admission. In the other of these vaccine was given on the thirtieth day to see if it would stimulate the patient to finish off a long course, and this single dose was followed by fatal hæmorrhage (Case 164).

In the 5 remaining fatal cases there is a strong suspicion that the vaccine was harmful. In one the vaccine was given a good chance, as he had seven injections, but he slowly and steadily became worse, and finally perforated 22 days after admission. The second, who had five injections, died of toxæmia and pulmonary congestion 14 days after admission. The third died in three days of hæmorrhage commencing 36 hours after an injection of 250 millions. In the fourth case death occurred from toxæmia and broncho-pneumonia, but he had some hæmorrhage following on two doses of vaccine. The fifth of these cases died also of toxæmia and lung involvement, but he had become more delirious and altogether worse after two injections.

Of the 24 *recoveries*, 2 certainly appeared to have been benefited by the vaccine—that is to say, not only did they do well and quickly, but much more so than might have been expected considering their severe condition on admission (Case 117).

Another case appeared to have done unusually well, but had a severe relapse, and therefore cannot be considered a good result for vaccine. In 1, vaccine was only given in a relapse, and, as this was quite short, it may have done good in this way.

In four other cases it may possibly have been beneficial, as they all did fairly well and made a good convalescence. Eight of the cases ran a severe and rather long course, but this was no more than might have been expected and one cannot say that vaccine affected them one way or the other (Case 114 and Case 177). In 1 case the vaccine was stopped after two injections as the patient was doing badly owing to severe involvement of the lungs.

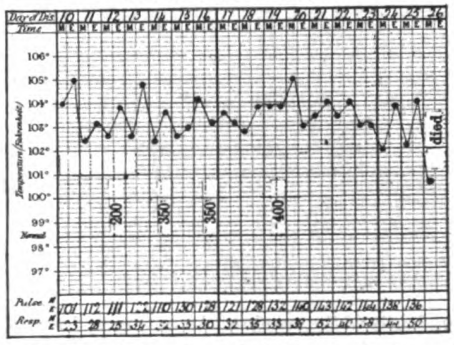
In 6 of the cases vaccine appeared to do harm, as although it was thoroughly tried, all these cases had long courses (two of over 80 days) which were associated with great weakness, wasting, and other complications. The average day of the disease on which the temperature first settled was the thirty-sixth, whereas in the controls it was the twenty-seventh day.

(*b*) In the *non-vaccinated* cases there were 10 deaths (27 per cent.) and 27 recoveries. Six of the fatal cases died of toxæmia and broncho-pneumonia, with a course similar to that of the vaccinated cases of this type. One of the 6 had a severe and one a slight hæmorrhage. Two cases died of perforation. In one of these the perforation did not occur till about the seventh week of the disease, and the other one had a hæmorrhage preceding the perforation. One case which had suppurating parotitis died of a confluent broncho-pneumonia. The remaining fatal case had thrombosis of the left femoral and external iliac vein and finally died as the result of pulmonary infarct and pleurisy.

Of the 27 recoveries, 10 ran the usual course of such cases, nearly all of these making a good convalescence. Two cases did remarkably well considering their apparent severity on admission. These cases are shown, as had they been given vaccine they would have appeared good results for this treatment (Cases 32 and 23). Two cases ran a course worse than the average, one being very prolonged and complicated by hæmorrhage, parotitis, and pyelitis, and the other was prolonged for six weeks but without complications. Of the remainder, 6 patients did rather better than usual and had no complications or sequelæ, whereas 8 others did rather worse than usual and all had one or more complications.

***Summary of this class.*—I wish to draw particular attention to this class as a test of vaccine, because, whereas in Class 1 the prognosis is bad, and in Classes 3, 4, and 5 fair to very good, it is in Class 2 that the prognosis is doubtful. It was hoped that in this class vaccine treatment might be found to turn the balance. It will be seen from the above analysis that this is not so. The mortality-rate is not lowered, neither is the incidence of relapses or complications lessened by this stock vaccine. Also the average cases which did well with vaccine ran a course very much the same as the average case which did well without it, and the cases which did exceptionally well in either group are balanced by such cases in the other. Finally, the average length of the primary period of pyrexia in the vaccine treated cases was longer by nine days than in those cases which had received no vaccine.**

CHART 5 (Case 159).



CASE 159 (Chart 5).—On admission tenth day: Looks toxic, but is quite sensible. Pulse soft and dicrotic; abdomen slightly distended and generally tender; bronchitis both bases. Blood culture = B. typhosus. Thirteenth day: Delirious; bases congested and broncho-pneumonia of influenzal type. Fifteenth day: Rigor followed vaccine. General condition is not so good, he is more delirious, and

abdomen is more distended. Twentieth day: Vaccine given at 7 P.M. last night. At 3 A.M. this morning much worse, temperature rose to 105° F., and pulse to 150. Is now very toxic with widely dilated pupils. Patient continued very toxic and finally died of exhaustion.

Summary.—A severe case (Class 2) which got decidedly more toxic while on vaccine. Vaccine certainly appeared to do harm, as patient was worse after each individual dose.

CHART 6 (Case 117).

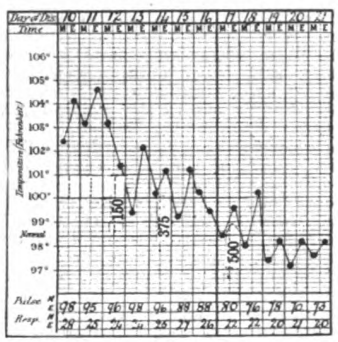
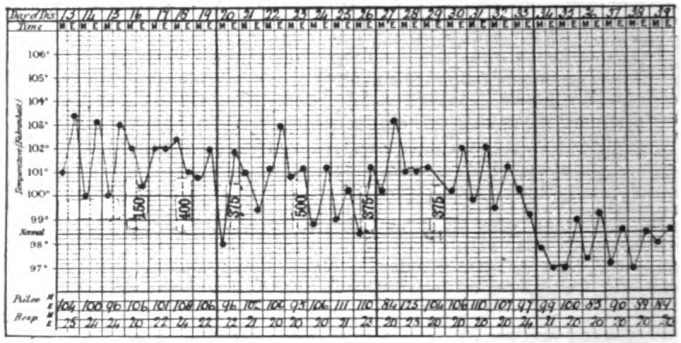


CHART 7 (Case 114).



CASE 117 (Chart 6).—On admission tenth day: Looks rather toxic, but mental condition is clear. Pulse is soft but not dicrotic; abdomen distended and slightly tender; heart sounds good; much big tube bronchitis. Thirteenth day: Toxic and delirious and trying to get out of bed. Blood culture = B. typhosus. Fifteenth day: Decidedly better; tongue moistening; profuse crop of spots all over body. Continued to make rapid progress.

Summary.—A rather severe and decidedly toxic case (Class 2) which has done remarkably well and rapidly and is apparently a good result for vaccine, but the absence of severe pulmonary involvement and the comparatively slow pulse throughout suggested a fairly good prognosis.

CASE 114 (Chart 7).—On admission thirteenth day: Mentally clear when roused. Small regular pulse; "beefy" tongue; abdomen not distended; spots are very numerous; no bronchitis. Blood culture = B. typhosus. Eighteenth day: Rapid, poor, irregular pulse; looks toxic. Twenty-first day: Pulse better; shows all-round improvement (? post or propter vaccine). Twenty-fifth day: General improvement continues, but temperature chart not affected. Thirtieth day: Continues doing well; quite undistressed; abdomen hollowed; temperature as before. Thirty-eighth day: Doing well, but looks pinched and is very wasted.

Summary.—A typical severe case (Class 2), marked by myocardial weakness. Final result good. There does not appear to be much evidence, however, that vaccine did any good. Case was prolonged and temperature was irregular

CHART 8 (Case 32).

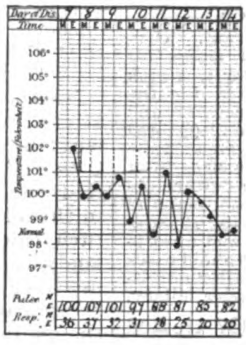
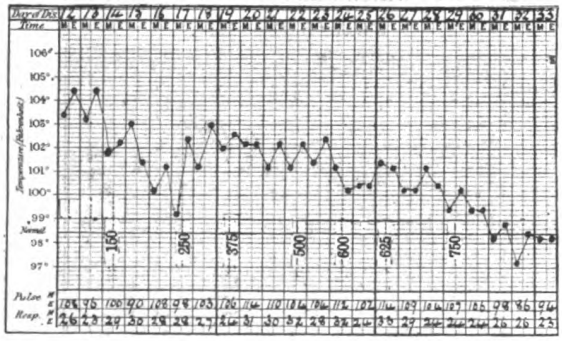


CHART 9 (Case 177).



independently of the vaccine. An example of several similar cases.

CASE 32 (Chart 8).—On admission seventh day: Toxic, flushed, incoherent, and later had muttering delirium. Regular, good pulse, not dicrotic; tongue is dry, with brown fur; abdomen full; respirations rapid, but no moist sounds in chest. Blood culture not done; Widal reaction = negative. Eighth day: Restless, delirious, and noisy; flushed and toxic. Tenth day: Remarkable change; no delirium; does not look toxic and is at his ease. Widal reaction = positive to B. typhosus. Patient went straight ahead to make an uninterrupted recovery.

Summary.—Appeared a typical severe and very toxic case (Class 2). Made a remarkably good and rapid recovery. If vaccine had been given would undoubtedly have been thought a good result for this treatment, and the case, therefore, should be compared with No. 117 (Chart 6).

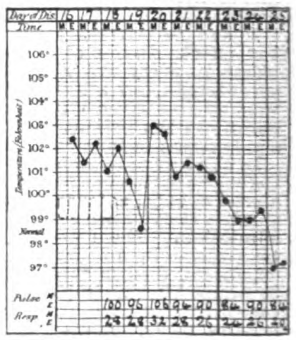
CASE 177 (Chart 9).—On admission fourteenth day: Flushed, toxic, and delirious, picking at bedclothes, and very talkative. Pulse is full and bounding, but dicrotic; tongue dry, brown fur; abdomen distended; coarse bronchitis. Blood culture negative; agglutination positive to B. typhosus. Eighteenth day: Flushed, still a little delirious; temperature fell, but general condition was not altered. Twenty-fourth day: Quieter the last few days and is now definitely improving. Thirtieth day: Slow improvement; mental condition poor, and he is frequently incontinent. Vaccine seems to have no effect; despite big dose there is no local or general reaction. Thirty-second day: Slow general improvement from now onwards, but mental condition did not recover for another ten days.

Summary.—A severe toxic case (Class 2) with mental weakness, pyrexia prolonged to end of fifth week. Ultimate result good. Had seven injections of vaccine which certainly did not shorten case, and it is doubtful whether vaccine had effect. Case is shown as an example of many similar cases which eventually did well but in which vaccine appeared to have no definite effect.

CASE 23 (Chart 10).—On admission eighteenth day: Flushed, looks toxic, laboured breathing; pulse of big volume but soft; abdomen not distended; no moist sounds, although slightly cyanosed and breathing deeply. Twenty-first day: Much better all round, and has lost his toxic look. Went ahead rapidly after this. Blood culture before admission reported as B. typhosus. Blood culture was negative here, but agglutination reactions strong with B. typhosus.

Summary.—Typical toxic and apparently severe case (Class 2) on admission, which rapidly improved in an unexpected manner without vaccine and which made a rapid convalescence. Case is shown as an example of several which, if they had received vaccine, might have been thought good results.

CHART 10 (Case 23).



Classes 3 and 4. Moderately severe and slightly toxic or not toxic.—88 cases (44 treated with vaccine and 44 without). These two classes of case are considered together, as they form degrees of the same kind of case in which the prognosis varies from "good" to "very good." It is especially in this class of case that a good effect of vaccine is difficult to judge, as all are likely to do well, and vaccine is therefore liable to get undeserved credit

unless the unvaccinated controls are considered. The statistics of the control cases must be carefully examined (see Table I.), and it will then be seen that the effect of vaccine, in so far as it has a good influence, is practically negligible.

(*a*) In 5 of the *vaccinated cases* there did certainly appear to be an effect on the case as a whole, and in 1 each injection seemed to have a marked effect (Case 124). But cases of a similar nature may occur without vaccine treatment. In 10 other cases vaccine may have shortened the fever, and therefore may have done good in these.

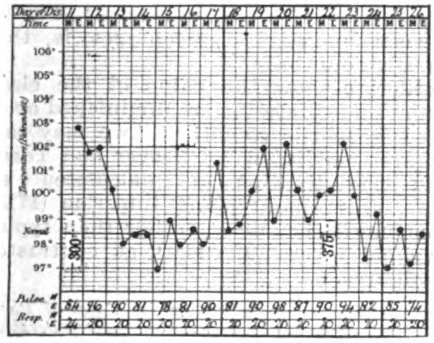
In 1 fatal case it certainly appeared to do harm, as this case was neither very severe nor toxic, and yet the patient got progressively worse while on vaccine and died of toxæmia and cardiac failure (Case 140). In the other fatal case which had vaccine death was due to sudden hæmorrhage on the seventeenth day of disease following on a dose of vaccine. There was, however, just such a case of fatal hæmorrhage occurring on the eighteenth day of disease in one of the controls. Vaccine may have been the decisive factor, but the hæmorrhage may thus have been a coincidence.

In 5 other cases the course was long or otherwise worse than the average, and vaccine may possibly have done harm to these. In the remaining 22 cases the patients did well, but just as might have been expected, and I do not think vaccine affected them either way.

(*b*) *In the 44 unvaccinated cases* there were also 2 deaths. One already referred to died of hæmorrhage, and the other also had hæmorrhage, but died with increasing severity and toxæmia.

The great majority of the cases ran the course that was expected. The average length of fever in the vaccinated and unvaccinated cases of these classes was about the same and is shown together with the incidence of complications and sequelæ in Table I.

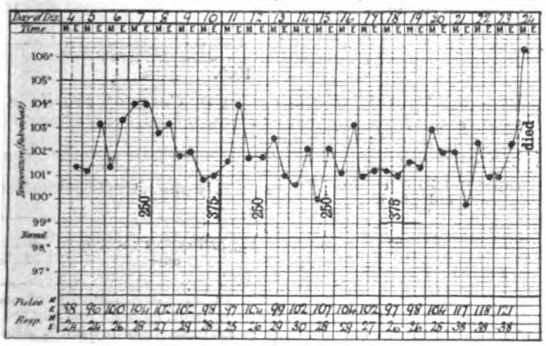
CHART 11 (Case 124).



CASE 124 (Chart 11).—On admission eleventh day: Sallow, with slight malar flush; lethargic, but clear mentally when roused. Regular, good volume, soft dicrotic pulse; normal abdomen and no moist sounds in chest. Blood culture negative; stool of thirteenth day grew B. typhosus.

Summary.—A case which looked moderately severe (Class 4), but with an excellent prognosis. Did very rapidly but had a relapse. Case is shown as one of the few in which each individual dose of vaccine appeared to have a marked effect both on temperature and general condition.

CHART 12 (Case 140).



CASE 140 (Chart 12).—On admission seventh day: Pale and looks ill; lethargic, but quite clear when roused; big volume, but very soft and dicrotic pulse; abdomen is not distended; no moist sounds heard in chest. Blood culture = B. typhosus. Fourteenth day: For the first few days was bright in the mornings and could read the paper. Is now getting a little more toxic; wanders at night; abdomen now tumid; pulse good and rarely above 100. Eighteenth day: Continues as above. Sleeping draught required at night. Tongue now quite dry and typical; pulse soft and dicrotic. Is now rather a severe case. Twentieth day: Very restless; is distended and has diarrhœa; heart is getting dilated. Twenty-third day: Heart shows cantering rhythm. Tubular breathing left lower lobe, but rapid respiration is mostly toxic. Seems to be going downhill with cardiac weakness associated with a steadily increasing and now severe toxæmia. Vaccine quite useless (? has increased toxæmia).

Summary.—A typical slightly toxic and moderately severe case (Class 3)—*vide* pulse-rate, respiration-rate, absence of distension, &c., on admission. Patient had the appearance of one likely to do well, and vaccine therefore undoubtedly appeared to do harm.

Class 5. Very mild.—10 cases (5 treated with and 5 without vaccine).

One death occurred in this class in a man who had a severe relapse (?) and prolonged fever, after what appeared to be a very mild preliminary attack. It was only when in this acute stage that he had vaccine and the death is therefore in brackets in the comparative tables. Two vaccinated cases ran an unusually long course, and it should be noted that the average length of fever in the vaccine-treated cases was much longer than in those who did not receive it. As the numbers are small one can only say that in this class the vaccine did not appear to have any good effect.

The Inoculated Cases.

There are 30 of these, half being treated with vaccine. They had all been inoculated once or twice during the nine months preceding their illness. B. typhosus was isolated from each. As the number in each series is small I do not think that much can be deduced from the statistics. The more important facts are set out in Table II.

TABLE II.

—	Class 1.		Class 2.		Class 3.		Class 4.		Class 5.	
With (+) or without (0) vaccine	+	0	+	0	+	0	+	0	+	0
Number of cases in class...	2	2	6	6	4	4	2	2	1	1
*Mortality	2	0	2	1	—	—	—	—	—	—
Average length of fever ...	—	25·5	35	27	25	27	25	28	21	23
Hæmorrhage	1	—	1	1	—	1	—	—	—	—
Perforation	1	—	1	—	—	—	—	—	—	—
Relapse...	1	—	—	—	1	—	—	—	—	—
Prolonged convalescence	—	1	—	—	1	—	—	—	—	—
Thrombosis	—	—	—	—	1	—	—	—	—	—

It will be seen that in the above 15 cases vaccine had no good effect on the mortality or on the incidence of complications. I do not think that one can say that it definitely had a bad effect on the cases as a whole as the numbers are small. One outstanding fact, however, is that the average length of fever amongst the vaccinated cases of Class 2 (the largest class) was much longer than that of those in this class who had no vaccine.

* One of the cases of Class 1 which died was admitted in a critical condition with a subnormal temperature. He had one injection, after which the temperature steadily rose and he died 36 hours afterwards. In the other fatal case of this class the temperature took six weeks to reach normal; the patient then had a relapse, during which he died of perforation of an old ulcer. Of the 2 fatal vaccinated cases of Class 2, one died of perforation after three injections and the other died of a confluent broncho-pneumonia, being then in a very asthenic state with a subnormal temperature. There was no case among the series receiving vaccine which did markedly better than any of the control cases.

In none of the 4 cases which were given the *serum-treated vaccine* is there any reason to suppose that their course was definitely affected. One of the cases died of toxæmia. It was a severe prolonged case, and the serum-treated vaccine was given late in the disease to see if it could stimulate the patient to further efforts, but without effect.

Summary and Conclusions.

In the total vaccinated cases there were 29 in which it appeared that vaccine had a definite good influence. Of these, 20 belonged to Classes 3 and 4

—i.e., to those classes in which the prognosis is good. In other words, "good results" are more often obtained where good results can be expected by ordinary methods of treatment alone. On the other hand, the mortality rate and the average length of fever in these classes were slightly worse among the cases who had vaccine.

Among the cases belonging to Classes 1 and 2 in which the vaccine appeared to do good none had severe lung involvement. Those cases which had much bronchitis or broncho-pneumonia (the average severe case) ran the severe course which is usual and vaccine appeared to be of no avail. To say that, if the average severity of the cases treated had been less the vaccine would have had better results, is merely to say, I think, that the cases would then have done better anyhow.

From all this it would appear (*a*) that it is in just those cases in which the physician so much requires help that vaccine is disappointing; (*b*) that vaccine neither shortens the fever nor reduces the number of complications in even that class of case which is likely to do well; and (*c*) that there is a decided suspicion that vaccine increases the incidence of hæmorrhage.

Therefore the conclusion is that the use of a stock vaccine in typhoid cannot be recommended as a routine treatment.

I should add that these conclusions are largely contrary to the impressions which I received during the treatment of the earlier cases. I had not then seen a sufficient number of similar cases which did well without vaccine, and being rather biassed in its favour I gave undeserved credit to this treatment.

FURTHER REMARKS ON AGGLUTINATION TESTS IN INOCULATED PERSONS,

AND THE INFLUENCE OF FEBRILE CONDITIONS ON INOCULATION AGGLUTININS.[1]

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IN the course of the discussion on Paratyphoid Fever at the Royal Society of Medicine on Nov. 25th, 1915, Captain H. L. Tidy[2] made known certain conclusions which he had arrived at regarding the value of agglutination tests in typhoid and paratyphoid fevers and other febrile conditions. These conclusions were so completely divergent from previously established results that Dreyer and Torrens[3] at once briefly summarised in a letter to THE LANCET the mass of evidence then in their possession which showed the complete untenability of Tidy's views. Shortly afterwards Ainley Walker[4] dealt with the same contentions by showing that this marked discrepancy in results seemed only to be explicable by a recognition of the gross character of the fallacies inherent in the method used by Tidy.

In apparent ignorance of the emphatic contradictions of his statements regarding the influence of febrile conditions on inoculation agglutinins offered in these communications, Tidy repeated and amplified his conclusions in a recent issue of this journal[5] in a preliminary note on a report to the Medical Research Committee.

Unfortunately the matter cannot be allowed to rest here, for Tidy's conclusions would, if accepted, have a most disastrous effect upon diagnosis, and upon our estimate of the protective value of inoculation, since the vast majority of febrile affections occurring in persons inoculated within the preceding year would then necessarily be diagnosed as typhoid fever on the results of properly conducted agglutination tests. Fortunately, however, they can readily be shown to be entirely fallacious. Tidy's contentions are as follows:—

1. Inoculation agglutinins are diminished or entirely removed by febrile conditions. It is possible that they are converted into agglutinoids.
2. In certain cases they may return, but usually do not do so.
3. A positive agglutination reaction to B. typhosus after the fifth day of pyrexia has the same value in an inoculated as in an uninoculated person.
4. Immunity conferred by inoculation may be affected at the same time as the inoculation agglutinins.

The actual number of observations on which these conclusions are based cannot be ascertained from the note in question, beyond the fact that the material included only 14 cases of paratyphoid B fever, and 9 cases "of septic origin." The value of the results quoted in percentages is, therefore, necessarily doubtful.

In order to show the value of the claim that "inoculation agglutinins are diminished or entirely removed by febrile conditions," we may take first the figures published by Dreyer and Torrens for typhoid agglutination in inoculated subjects suffering from paratyphoid infection (171 cases), or from febrile conditions other than typhoid and paratyphoid fevers (97 cases), as contrasted with Tidy's figures.

TABLE I.—*Typhoid Agglutination in Cases of Paratyphoid Fever occurring in Typhoid-inoculated Persons.*

Dreyer and Torrens (standard cultures).		Tidy (microscopic method).	
Serum dilution in which agglutination occurred. 1 in—	Number of cases.	Agglutination recorded as—	Number of cases.
*250 or more	157	More than slight	3
100-250	10	Slight	3
50-100	2	Nil	8
25-50	2		14
	171		

* In the majority of these the dilution was considerably greater than 1 in 1000.

TABLE II.—*Typhoid Agglutination in Cases of Febrile Affections other than Typhoid or Paratyphoid Fever occurring in Typhoid-inoculated Persons.*

Dreyer and Torrens (standard cultures).		Tidy (microscopic method).	
Serum dilution in which agglutination occurred. 1 in—	Number of cases.	Agglutination recorded as—	Number of cases.
250 or more	57	In an unstated number of cases 16 per cent. gave a "distinct trace" of agglutination in 1 in 50. Among these were 9 cases of septic origin which gave:—	
100-250	24		
50-100	11		
25-50	3		
Less than 25 ...	2	Nil 1 in 20	6
	97	Not stated, but presumably more than 1 in 20 ...	3

[1] Being a part of a report to the Medical Research Committee.
[2] THE LANCET, 1915, ii., 1191. [3] THE LANCET, 1915, ii., 1369.
[4] THE LANCET, 1916, i., 17.
[5] THE LANCET, 1916, i., 241.

Hitherto unpublished observations made in the Department of Pathology at Oxford by Dr. A. D. Gardner, Mr. Wilburt C. Davison, and ourselves give the same result as those published by Dreyer and Torrens. The figures are given in Table III.; they comprise 108 cases of febrile affections other than typhoid fever, in persons who had been inoculated against typhoid within the preceding 12 months. Of these cases 42 were cases of paratyphoid A fever, 33 were cases of paratyphoid B fever, and 33 were cases of "other pyrexial conditions" of a continued character.

To facilitate the survey of these results the agglutination titre is expressed not only in standard units, but also in the highest dilution in which agglutination occurred. The cases are arranged in order according to the number of standard agglutinin units in the serum. Five different standard agglutinable cultures were in use during the course of these investigations. Their respective reduction factors (i.e., relative sensitiveness to agglutination) were 4·0, 4·3, 4·7, 5·4, and 6·3. Accordingly, in order to arrive at a true comparison of agglutination titre, attention must be directed to the number of standard agglutinin units per c.c. of serum, which alone affords a true measure of the agglutinating power of any given serum. The importance of thus expressing results in standard agglutinin units is clearly seen from Table III., since with different standard agglutinable cultures agglutination in the same serum dilution does not necessarily imply the presence of the same number of standard agglutinin units in the serum. For owing to the different agglutinability of different cultures each standard agglutinable culture has its own particular reduction factor for calculating the number of standard agglutinin units in any given serum tested. The standard agglutinin unit is that amount of agglutinating serum which, when made up to 1 c.c. volume with normal saline solution, causes standard agglutination on being mixed with 1·5 c.c. of a particular standard agglutinable culture and maintained at 55° C. for two hours in a water bath followed by 15 to 30 minutes at the room temperature. Standard agglutination is the highest dilution in which a given serum causes marked agglutination (without sedimentation) visible to the naked eye. It follows from what has just been said that if standard agglutination occurs in a serum dilution of 1 in 1000, say, then 1000 divided by the reduction factor for the particular standard agglutinable culture employed gives the number of standard agglutinin units per c.c. of the serum.

From the extensive mass of evidence presented in Tables I. to III. it is obvious: 1. That the febrile condition associated with paratyphoid fever does *not* cause disappearance of typhoid agglutinins from the blood of persons inoculated against typhoid. 2. That "other febrile conditions" also, in so far as they have hitherto presented themselves, do *not* cause disappearance of typhoid agglutinins from the blood of inoculated persons. 3. That the statement that "a positive agglutination reaction to B. typhosus after the fifth day of pyrexia has the same value in an inoculated as in an uninoculated person" is entirely erroneous. Its acceptance would lead to such deplorable results in diagnosis that we feel compelled to repeat its categorical denial. For if Tidy's novel view were to be seriously applied in sero-diagnosis the great majority of persons inoculated within a year or so, who suffered from five days' pyrexia, would necessarily be returned as cases of typhoid infection when examined by a reliable agglutination technique.

TABLE III.—A. *Typhoid Agglutination in Cases of Paratyphoid A Fever occurring in Typhoid-inoculated Persons.*

Number.	Case number.	Highest serum dilution in which agglutination occurred. 1 in—	Serum dilution in which standard agglutination occurred. 1 in—	Number of standard agglutinin units per c.c. of patient's serum.	Number.	Case number.	Highest serum dilution in which agglutination occurred. 1 in—	Serum dilution in which standard agglutination occurred. 1 in—	Number of standard agglutinin units per c.c. of patient's serum.
1	31	500	350	88	22	96	250	175	28
2	84	,,	,,	88	23	113	,,	,,	28
3	89	,,	,,	75	24	147	,,	,,	28
4	121	,,	,,	75	25	32	125	90	22
5	122	,,	,,	75	26	77	,,	,,	22
6	124	,,	,,	75	27	78	,,	,,	22
7	126	,,	,,	75	28	80	,,	,,	22
8	127	,,	,,	75	29	140	,,	,,	22
9	148	,,	,,	56	30	141	,,	,,	22
10	149	,,	,,	56	31	135	,,	,,	21
11	151	,,	,,	56	32	136	,,	,,	21
12	143	250	175	44	33	138	,,	,,	21
13	146	,,	,,	44	34	98	,,	,,	19
14	134	,,	,,	41	35	101	,,	,,	19
15	90	,,	,,	37	36	107	,,	,,	14
16	92	,,	,,	37	37	116	,,	,,	14
17	93	,,	,,	37	38	20	50	35	9
18	94	,,	,,	37	39	91	,,	,,	7
19	105	,,	,,	37	40	102	,,	,,	7
20	129	,,	,,	37	41	133	,,	,,	7
21	130	,,	,,	37	42	117	,,	,,	6

B. *Typhoid Agglutination in Cases of Paratyphoid B Fever occurring in Typhoid-inoculated Persons.*

1	24	5000	3500	875	18	42.d	500	350	65
2	28	,,	,,	875	19	21	250	175	44
3	62.d	,,	,,	650	20	29	,,	,,	44
4	69	2500	1750	438	21	33	,,	,,	44
5	19	1250	875	219	22	59	,,	,,	44
6	26	,,	,,	219	23	144	,,	,,	44
7	66	,,	,,	219	24	145	,,	,,	44
8	68.d	,,	,,	162	25	150	,,	,,	44
9	56	500	350	88	26	128	,,	,,	37
10	57	,,	,,	88	27	115	,,	,,	28
11	65	,,	,,	88	28	15	125	90	22
12	70	,,	,,	88	29	22	,,	,,	22
13	72	,,	,,	88	30	132	,,	,,	21
14	74	,,	,,	88	31	103	,,	,,	19
15	79	,,	,,	88	32	73	50	35	9
16	120	,,	,,	75	33	118	,,	,,	6
17	125	,,	,,	75					

C. *Typhoid Agglutination in Cases of Other Febrile Conditions occurring in Typhoid-inoculated Persons.*

1	30	2500	1750	438	18	106	250	175	37
2	63	,,	,,	438	19	68	125	90	22
3	51.d	,,	,,	325	20	18	,,	,,	22
4	27	1250	875	219	21	75	,,	,,	22
5	53.d	,,	,,	162	22	83	,,	,,	22
6	34	500	350	88	23	137	,,	,,	21
7	58	,,	,,	88	24	100	,,	,,	19
8	119	,,	,,	75	25	58.d	,,	,,	17
9	123	,,	,,	75	26	97	,,	,,	14
10	52.d	,,	,,	65	27	114	,,	,,	14
11	61.d	,,	,,	65	28	23	50	35	9
12	112	,,	,,	56	29	76	,,	,,	9
13	64	250	175	44	30	81	,,	,,	9
14	71	,,	,,	44	31	95	,,	,,	6
15	87	,,	,,	44	32	25	<25	<17·5	<5
16	139	,,	,,	44	33	53	,,	,,	<5
17	142	,,	,,	44					

On examining the new material presented in Table III. rather more closely it will be seen that in *only two* cases does the agglutination titre of the serum fall below 1 in 25. which represents in these cases less than 5 standard agglutinin units per c.c. of serum. But it has been found that the serum of normal non-inoculated persons who have not had typhoid fever only very exceptionally exhibits the presence of as much as 4 standard agglutinin units.[6] It follows that in no less than 106 out of the 108 febrile cases (i.e., 98 per cent.) the agglutinin titre is greater than can be expected to be found in normal non-inoculated individuals. Only in 2 cases (1·9 per cent.) does it fall as low as in the average normal non-inoculated person. And this percentage is not greater than has been found among a similar number of inoculated persons examined at similar intervals after their inoculation, who remained in normal health at the time of examination.

Of 42 cases of paratyphoid A fever recorded in Table III. no case exhibits an agglutinin titre of less than 6 units, which corresponded to agglutination in a dilution of 1 in 50. In the case of paratyphoid B fever the table shows again that of 33 cases no case exhibits an agglutinin titre of less than 6 units.

There are, however, other features of interest to be noted in the table. Thus, so far from paratyphoid fever diminishing the titre of typhoid agglutinins in the serum of inoculated persons, paratyphoid B fever commonly causes a rise in the typhoid agglutinin titre which is frequently of very considerable extent. In the case of paratyphoid A fever both the frequency with which this rise occurs and its extent are usually much less evident. Attention has already been drawn to these points in the Directions for the Use of Standard Agglutinable Cultures which, since the middle of July, 1915, have been issued from this Department on behalf of the Medical Research Committee along with every issue of the Standard Agglutinable Cultures themselves in the following terms:—

In the case of inoculated persons the diagnosis of active typhoid (or paratyphoid) infection will require two or more successive examinations of the serum.

(*a*) If the individual is suffering from active *typhoid* infection his titre of typhoid agglutination will exhibit the usual rise and subsequent regular fall seen in non-inoculated subjects, but starting from and returning towards the higher base line of inoculated persons.

(*b*) If the individual is suffering from active *paratyphoid* infection one of three things may occur as regards his *typhoid* agglutination titre—namely: (1) No appreciable change may occur in the titre of typhoid agglutination; (2) a relatively slight rise may occur, followed by a fall towards the former level; (3) a marked rise may occur synchronous with the rise in paratyphoid agglutination titre, and subsequently followed by the usual fall towards the former level. Meanwhile the titre of *paratyphoid* agglutination runs the normal course of rapid rise to a maximum (usually exceeding the maximum typhoid titre) followed by a fall, at first rapid and then slower as already described for typhoid subjects, and falling *below* the persistent base line of typhoid agglutination of inoculated persons.

In the present series of observations it will be seen that if a serum titre of 25 standard agglutinin units is chosen for purposes of comparison it is found that in the case of paratyphoid B fever (Table III., B) 27 patients out of 33—i.e., 81·9 per cent.—exhibited a titre of more than this number of units, while in the case of paratyphoid A fever (Table III., A) only 24 patients out of 42—i.e., 57·1 per cent.—had a titre exceeding 25 units, and in the case of "other febrile conditions" (Table III., C) only 18 patients out of 33—i.e., 54·5 per cent.—also had a titre exceeding 25 units.

[6] Similar statements hold with regard to paratyphoid agglutinins.

Thus it is obvious that the paratyphoid B cases show on an average a very much higher titre of typhoid agglutination than either of the other series. But there is also an indication that the paratyphoid A cases present a higher titre than the cases of "other febrile conditions." At the same time there is, as already remarked, no indication whatever that these other febrile conditions exhibit a lower titre than is met with in typhoid-inoculated healthy individuals examined at similar intervals after their protective inoculation.

As the results already recorded by Dreyer and Torrens and the new material here presented are entirely at variance with the assertions made by Tidy, we are compelled to conclude that his statement that of the two main techniques with regard to agglutination, microscopic and macroscopic, "they are both reliable, and for diagnostic purposes no further elaboration is necessary beyond the ordinary well-recognised precautions described in text-books," is not borne out by the facts. Tidy states that he has used the microscopic method throughout. Its fallacies have for years been abundantly emphasised in previous communications by the present writers and others. Now that the triple inoculation with mixed vaccine (typhoid, paratyphoid A, and paratyphoid B) has replaced the simple typhoid inoculation, it will be imperative to use methods that give accurate quantitative results. Otherwise the value of agglutination tests in the diagnosis of typhoid and paratyphoid fevers will become negligible. On the other hand, the method of using standard agglutinable cultures has been shown to give accurate and entirely comparable results in agglutination tests whether employed in purely scientific investigations or in the practical diagnosis of disease.

A NEW APPARATUS FOR THE ISOLATION AND CULTIVATION OF ANAEROBIC MICRO-ORGANISMS.

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As is well known, the methods at present in use for the isolation and cultivation of anaerobic bacteria are in many ways unsatisfactory, and pure cultures of these organisms are so difficult to obtain that they are rarely attempted in ordinary bacteriological work. Indeed, the output of work upon this class of bacteria is relatively so small that some doubt is justifiable as to the correctness of some of the deductions even of the classical investigators.

It would appear that the difference between a successful and an unsuccessful growth depends upon the removal of the last traces of oxygen from the environment of the bacterium. Many methods have been devised to achieve this end, but their very multiplicity indicates a lack of means. Bacteria may be protected from the effects of oxygen by any of the following methods:—

1. By covering the surface of a liquid or solid medium with a substance impermeable to air, such as a layer of paraffin or a sheet of mica. The objection here is that oils and paraffin are not entirely impervious, and, further, any oxygen remaining in the medium is not removed.

2. The dissolved oxygen may be driven off by heat if the medium is not coagulable, or a reducing substance, such as glucose or sodium sulphide, may be added to the medium itself. The deep glucose-agar stab is a combination of methods 1 and 2. Under the same category comes the method of Theobald Smith and Tarozzi of adding a fragment of living tissue to the medium, which also has the effect of removing the oxygen. The objection to such methods is that surface growths are impracticable, and the medium requires to be more or less freshly prepared to give the best results.

3. One of the methods most practised is the cultivation in an atmosphere from which the oxygen has been removed by chemical means. An alkaline solution of pyrogallic acid is commonly used for this purpose, as in the well-known apparatus of Buchner and Bulloch. However, the affinity of such substances for oxygen is not sufficiently great to remove the gas totally from an atmosphere.

4. Many methods have been devised for the removal of oxygen by mechanical means, as by displacement with another gas or by the vacuum pump, or by a combination of the two, without, however, achieving decisive results.

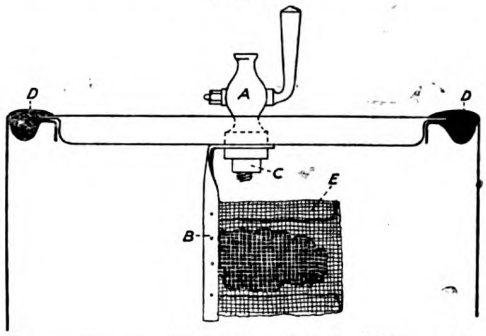
We had tried many of these methods without success, when we noticed that Laidlaw had suggested the use of platinised charcoal and colloidal platinum to remove the oxygen from anaerobic cultures, although Pfuhl had previously made use of the catalytic properties of spongy platinum to obtain anaerobic cultures in broth tubes exposed to the air. Our results with this technique were so promising that we determined to work out the method in greater detail, and have succeeded in producing an apparatus by which isolated colonies of anaerobes may be obtained upon the surface of ordinary laboratory media with great facility.

Our method consists briefly in enclosing the culture medium in an airtight vessel which has suspended in it a piece of asbestos wool impregnated with palladium black.[1] The vessel is then attached to a hydrogen generator and hydrogen is allowed to pass in, when it will be occluded by the palladium and combined with any oxygen present. A negative pressure thus develops inside the vessel and hydrogen will pass in until no oxygen remains. The apparatus is then detached from the generator, but the action will still continue and any traces of oxygen which diffuse from the medium itself will be rapidly removed. Thus a more or less complete vacuum towards oxygen is obtained.

The making of the anaerobic apparatus.[2]—A tin with a lever-off lid such as is used for paint is selected. It should measure 7 inches high by 5 inches broad. A small hole is drilled in the centre of the lid, and into this is fitted a small stopcock (A), such as is used for model steam-engines, the joint being made gas-tight with a little solder. Over the thread of the tap on the under side of the lid a small brass bracket (B), as shown in the diagram (Fig. 1), is fitted and secured by screwing up the collar (C) of the tap. The gutter round the top of the tin is next filled with plasticine (D); the pot, after having been tested for tightness, is then ready for use. The gas-tightness of the tin can be readily tested by pouring a few drops of ether inside. The lid is forced tightly into position and a little plasticine turned over the edge of the lid. The tap being shut, the whole tin is placed under hot water and any escape of ether vapour is immediately detected.

The palladium capsule (E) consists of a wire gauze envelope containing 0·25 grm. of asbestos-wool impregnated with palladium black. The palladium asbestos (about 40 per cent.) is made by weighing out 0·25 grm. of asbestos-wool, placing it in a small evaporating dish, and adding 1·5 c.c. of a 10 per cent. solution of palladium chloride. The wool is then moulded into a flat mass about 1 inch square and the dish gently heated until the wool is dry. The palladium chloride is somewhat difficult to dissolve, but the addition of a little concentrated hydrochloric acid will overcome the difficulty. The palladium chloride is then reduced by heating the impregnated wool first in a smoky gas-flame until it is coated with a layer of carbon, and then in the blowpipe. The palladium asbestos should now be able to

FIG. 1.



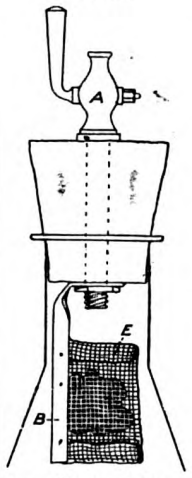
Anaerobic apparatus consisting of tin with lever-off lid. A = Stopcock; B = brass bracket secured by C = collar of the tap; D = plasticine filling in gutter; E = palladium capsule.

light a jet of hydrogen which is made to impinge on it. A piece of fine brass wire gauze of suitable size is then folded over the asbestos and the edges doubled over so as to form a complete capsule. The capsule is then clipped by one edge into the brass bracket in a vertical position under the orifice of the tap. Before use the inside of the tin and the under side of the lid should be varnished to prevent rusting, and when dry the bottom of the tin is protected with cotton-wool.

Method of use.—1. Place culture tubes inside the pot. 2. With a rag dipped into spirit spread the plasticine towards the periphery of the top of the tin. 3. Heat the capsule in the Bunsen flame. 4. Immediately force on the lid and push on to the open tap the rubber tubing from the hydrogen generator. The gas need not be purified in any way and commercial chemicals may be used in its preparation. 5. Turn on the gas. 6. After a minute or two close the tap, detach the rubber tubing, and with the moistened rag spread the plasticine from the periphery of the top inwards over the edge of the lid. 7. Again pass in the hydrogen until the increasing pressure stops the generation or the tin is absolutely cold. This takes about 15–20 minutes. 8. When the pot is to be used for gelatine media the temperature inside must be reduced by enclosing a quantity of freezing mixture (salt and ice).

Application of the method to flasks and large tubes.—We have used the same principle in the growth of anaerobes in flasks of broth or in test-tubes too large to get into the pot. In these cases a soft rubber stopper takes the place of the lid of the tin, as shown in Fig. 2, or the capsule may be attached by pins, heated and thrust into the stopper. When using this method it is essential to varnish the whole of the stopper and joints with thin gold size to ensure a gas-tight fitting. The gold size is easily scraped off later with a knife.

FIG. 2.



Anaerobic apparatus consisting of flask with soft rubber stopper. Lettering as in Fig. 1.

Application of the method to plate cultures.—Petri dishes may be enclosed in the pot in place of tubes, but it is desirable to use a small dish which can be accommodated in the standard pot. A larger pot requires a very careful adjustment of the quantity of palladium to the volume of the tin.

With earlier models of the apparatus we incorporated an indicator which showed the degree of anaerobism obtained within. The vessel was then made of glass, and a sterile tube of broth containing methylene blue was placed inside and the degree of bleaching observed. With the present apparatus this indicator is not visible from without, and we rely more upon the presence of a positive pressure, as measured with the hydrogen generator, as an indication of satisfactory conditions within. The only way in which the apparatus can fail is through a slight leak in the tap, and every method to avoid this should be adopted. The tap should be kept well greased and covered with an indiarubber

[1] Platinum may be used instead, but as the reaction is less intense a longer time is required to produce anaerobic conditions.

[2] Messrs. Baird and Tatlock, of 14, Cross-street, London, E.C., are prepared to supply the above anaerobic apparatus.

cap. If a tin is put away with an unsatisfactory tap, especially in the incubator, the cultures may readily be killed or may become grossly contaminated with moulds. When the anaerobic state is maintained satisfactorily moulds never grow inside the vessel.

Practical results obtained with the apparatus.—We have now had our apparatus in use for a number of months and we are able to obtain constantly satisfactory results. Our work has been directed almost entirely to the study of septic gunshot wounds, and we have isolated from these a large number of strains of bacteria, some of which we can identify while others are unknown to us. If one takes an ordinary sloped agar tube or, better, serum-agar and inoculates it with pus taken direct from a wound without any preliminary heating or other preparation either of the medium or pus, it is easy in 24 to 48 hours to grow isolated surface colonies of such bacteria as B. welchii or "malignant œdema," and then by subculture to isolate these strains pure. This isolation is easy, but at the same time it must be admitted that it is not so simple as is the case with most anaerobic organisms. It is not uncommon to find a contamination of a strain persisting through several subcultures from absolutely distinct colonies, and particularly is this the case with staphylococcus. Such cultures may, of course, be readily purified by heat, but we have avoided this method as far as possible owing to the impossibility of gauging at present the effect of heat upon the anaerobe. We have had little difficulty from contaminations with streptococci or colon bacilli; indeed, the conditions of the culture appear to reduce seriously the power of these bacteria to grow. We have been often struck by the inability of so-called facultative anaerobes to develop in our apparatus.

Having thus isolated a strain in pure culture it is very easy to study its behaviour upon the ordinary laboratory media, slope agar, agar stabs, broth, serum, gelatine, milk, and so on. Further, the action of the bacteria upon the various fermentable sugars or upon dye-stuffs may be determined and so valuable information obtained which may bear upon a more satisfactory classification of such strains.

It is well known that many anaerobes are affected in their morphology and biological characters—for instance, in the production of toxin—by the presence of sugar in the medium, and it is one of the advantages of the present method that dextrose is quite unnecessary for the furtherance of growth. We have thus been able to study these bacteria in a more stable condition than is usual.

Advantages of the method.—1. The method is clean. 2. It is rapid, the whole process being complete in about a quarter of an hour. 3. It is available immediately without any preliminary preparation or reagent other than hydrogen. 4. It is suitable for use with any laboratory medium without preliminary preparation of the medium. 5. It will grow the strictest anaerobes with great rapidity upon the surface of a solid medium. For instance, colonies of B. tetani in subculture upon serum-agar are visible in 24 hours.

We desire to express our thanks to Professor Bulloch for his kindly interest and advice on many points, and to Captain W. E. Bullock, R.A.M.C., for assistance and advice in the details of the method.

Literature.—1. H. Buchner: Eine neue Methode zur Kultur anaerober Mikroorganismen, Centralbl. f. Bakter. u. Paras., Orig., 1888, Bd. iv., p. 149. 2. W. Bulloch: A Simple Apparatus for Obtaining Plate Cultures or Surface Growths of Obligate Anaerobes, Ibid.,

(*Continued at foot of next column.*)

GUNSHOT WOUNDS OF THE SPINE; THEIR SURGICAL ASPECT.[1]

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THOUGH injury to the spinal cord is not a necessary consequence of gunshot wounds of the spine, it is obvious that the chief interest of such wounds lies in the commonly associated injury to the spinal cord and nerve roots. From a clinical point of view, therefore, cases of gunshot wound of the spine may be divided into two main classes:—(1) Those in which the functions of the spinal cord are not interfered with; and (2) those in which there is more or less interference with the functions of the spinal cord, with or without obvious injury to the vertebral column. In the second group the damage to the spinal cord is usually immediate—i.e., occurs at the time of receipt of the primary wound. But it is of the very greatest importance to remember that in cases where the spinal cord has escaped immediate damage, later or remote effects involving this structure may follow on the injury to the vertebral column. These later effects are produced by inflammatory products giving rise to thickening of the meninges; adhesions between the dura and bony wall, the dura, pia-arachnoid, and cord, with subsequent pressure due to the formation of a simple serous cyst of the meninges; by narrowing of the spinal canal through excess or misplaced callus; by blood clot, intra- or extra-dural; or as the result of continued suppuration.

If the injury to the cord be immediate it may be caused by:—1. The missile itself passing through the spinal canal, in which case the cord is wholly or partially divided. 2. Fractured portions of bone driven in against the cord, causing compression, contusion, laceration, or complete division. This would appear to be the most frequent cause of the cord injury. 3. Concussion. Under this head are included those cases in which, though neither of the preceding causes is operative, yet as a result of the vertebral column being struck certain structural changes are set up in the cord which are due to the jarring or commotion effects of the blow. Spiller has described this condition as "traumatic myelitis." The cord may show no external signs of injury either to inspection or palpation. Lieutenant-Colonel Gordon Holmes has recently described in his Goulstonian lectures the microscopical appearances found in such cases. He points out that the special character of these lesions is their diffuse and irregular distribution and their tendency to diminish gradually from the point of maximal disturbance. He concludes: "Whatever may be the exact mechanism of spinal concussion it must be admitted that a sudden

[1] Being the opening remarks at a discussion at the Medical Society of London on March 20th.

(*Continued from preceding column.*)

Orig., 1900, Bd. xxvii., p. 139. 3. P. P. Laidlaw: Some Simple Anaerobic Methods, Brit. Med. Jour., 1915, vol. i., p. 497. 4. E. Pfuhl: Die Züchtung anaerober Bakterien in Leberbouillon, sowie in Zuckerbouillon und in gewöhnlicher Bouillon, mit einem Zusatz von Platinschwamm oder Hepin unter Luftzutritt, Centralbl. f. Bakter. u. Paras., Orig., 1907, Bd. xliv., p. 379. 5. Th. Smith: Some Devices for the Cultivation of Anaerobic Bacteria in Fluid Media without the Use of Inert Gases, Journ. of Boston Soc. of Med. Sciences, 1899, vol. iii., p. 340. 6. G. Tarozzi: Ueber ein leicht in aerober Weise ausführbares Kulturmittel von einigen bis jetzt für strenge Anaerobien gehaltenen Keimen, Centralbl. f. Bakter. u. Paras., Orig., 1906, Bd. xxxvii., p. 619.

violent impact on the vertebral column can produce diffuse, irregular, and severe structural changes within the spinal cord. The factors which determine the severity of these lesions must be the momentum of the projectile, the part and surface area of the vertebra which it strikes, and the region of the spine which is wounded."

Now, is it possible to recognise clinically these three different results of gunshot wounds of the spine? For were it so, the question of operative interference would be made very simple, inasmuch as the first and third groups obviously would be excluded as beyond surgical relief. Naturally, we turn to X rays as likely to be the most helpful agent in determining the nature of the injury. But, unfortunately, it is in gunshot wounds of the spine that, in my experience, X rays are most unreliable. This is not to be construed in any way into a criticism of the skill of radiographers. It is simply a statement of the limitations of the X rays themselves.

In the first place they may not reveal any bony injury even when present. This is particularly true of the single flat plate. In all such cases it is necessary to have stereoscopic plates taken. I have had two or three such experiences. Again, the X ray plate never reveals the full extent of the bony injury within the spinal canal—i.e., where the damage to the cord is being produced. This is not to be wondered at when we consider how small a piece of bone may be the traumatic agent and how much it is overlain and overshadowed by the vertebra surrounding it. Therefore, in my opinion, the X ray plate should only be regarded as confirmatory evidence, or used to assist in the localisation of foreign bodies or for the purposes of bony localisation.

In considering operative intervention, the questions that will arise are in order of importance:—1. Will any benefit to the patient result from the operation? 2. Will his life be endangered by the operation? 3. Will he be made worse by the operation?

The condition should certainly not be made worse by the operation, provided it is undertaken by a competent surgeon accustomed to operate frequently upon the spinal cord. Unless the operator has had considerable experience in spinal surgery, it is very easy to overlook the site and cause of the compression. In these cases there are two levels to be considered, the neurological and the bony. The level of the lesion as indicated by the clinical symptoms usually does not correspond with the level of maximal damage. This is explained by the secondary changes which take place above and below the site of the injury in the cord. It is essential, in order that an operation should be perfectly successful, that all pressure on the cord from whatever cause be removed. Hence the necessity for a wide exploration both vertically and laterally. It is not only not necessary, but it is bad surgery to waste time in searching for a missile which has ceased to do damage and has passage beyond the immediate area of operation. Yet one sees too frequently a sort of surgical hypnosis produced by an X ray plate which shows a bullet or piece of shell still in the human body, though perfectly innocuous at the time. This hypnotic state is apparently only recovered from when the operator is able to produce to the admiring onlookers the piece of lead, while his own satisfaction reminds one of a certain nursery rhyme connected with one Jack Horner. The operation is ended quite oblivious of the fact that the pressure on the cord has in no way been relieved by this "plumbic" manœuvre.

In septic cases care should be taken not to open the dura if still intact. If already opened care should be taken not to break down any adhesions of a protective nature lest a septic meningitis be set up. Drainage along the usual surgical lines must be employed in septic cases. In those cases free from sepsis the dura should be opened for inspection of the cord.

The patient's life will not be endangered by the operation if a proper estimate has been made of his general condition beforehand. The chief and most frequent contra-indication is a general septic condition arising from the state of the kidneys and bladder, with persistent high temperature and perhaps rigors and a weak and irregular pulse. There is an added danger where the intercostals are paralysed, but with a skilled anæsthetist this may be obviated.

Will any benefit result from the operation? Let us consider what the operation may be expected to do. Briefly, it will relieve pressure, or, at any rate, remove any doubt as to whether continued pressure exists. If the spinal cord be not totally destroyed continued pressure may succeed in completing its destruction. Therefore operation is indicated: (1) To relieve pressure from depressed or displaced fragments of bone; (2) to relieve pressure from blood-clot or from extensive hæmorrhage, either extra- or intra-dural; (3) to relieve pressure and prevent further destruction from œdema by enlarging the constricted bony canal; (4) to remove the future danger of pressure from exudate and inflammatory thickening.

No operation will restore a cord in which complete transverse section has taken place. Nor will an operation benefit cases of concussion. Therefore we are brought back to the question upon the answer to which hangs the whole subject of operation: Are there any symptoms by which we can in a reasonable time determine beyond a doubt that we are dealing with a case either of complete transverse section or of pure concussion? In short, is there any symptom-complex which establishes beyond a doubt that the injury to the cord is irremediable? If there is not, then should not such a conclusion urge us to give our patient the benefit of an operation which experience shows neither materially endangers his life nor adds to his discomfort, but actually lessens his pain? It will at least allow us to determine the exact nature and extent of the lesion and to place the cord under the most favourable conditions for recovery of function, if recovery be possible. I have said a reasonable time. It is unfair to the patient and unfair to surgery to wait on and on till hope gives place to despair and then to call in a surgeon as a last resource to perform the impossible.

Harley-street, W.

LITERARY INTELLIGENCE.—The *American Journal of Gastroenterology* has combined with the *Proctologist* and hereafter will be published as the *Proctologist and Gastroenterologist*, from St. Louis. Dr. Rollin H. Barnes, St. Louis, will be managing editor and publisher.

THE FINSBURY DISPENSARY.—Owing to the war the customary biennial festival of this institution has been abandoned, and the Lord Mayor of London, as vice-president, makes an earnest appeal for funds to carry on the work. Contributions may be sent to him at the Mansion House, or to the secretary, Finsbury Dispensary, Brewer-street, Goswell-road, E.C.

ANÆSTHESIA FOR ENUCLEATION OF TONSILS.

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IT might well be imagined that there is nothing worth saying that has not already been said upon the question of anæsthetics for operations upon the tonsils. The operation now in vogue, however, for their complete removal makes a call upon the anæsthetist very different in degree from that hitherto demanded by the less radical procedure. Nor does it appear from recent correspondence in the *British Medical Journal* that this difference is on all hands fully recognised. Before the enucleation operation was introduced, an anæsthetic for the ordinary operation of tonsillectomy was a short and not formidable undertaking and one that was widely in the hands of the comparatively inexperienced. The present position is very different, and all anæsthetists will, I think, agree that to manage the anæsthetic with perfect success during the enucleation of both tonsils by dissection, with or without the use of guillotine or snare in addition, makes a tax upon experience and skill scarcely rivalled by any other operation of the same comparatively short duration. The reason for this is chiefly that most operators find their work hampered when freeing the tonsil if there is any contraction at all of the faucial muscles. To achieve this means procuring a degree of narcosis which might well be considered excessive in any other relation; it is actually a degree which places the child at the very limit of safety if, as is generally the case, chloroform is employed. There is a wide difference between the narcosis during which a tonsil can be rapidly cut across, as in the old days, without any reflex movement being evoked, and that which must be maintained whilst the organ is dragged or manipulated or dissected out of its very bed. It is true that some operators do not mind, or even prefer, an anæsthesia which permits the child to cough if blood remains on the back of the pharynx, an anæsthesia in which there is contraction of fauces to some extent during the manipulations which effect the dislocation of the tonsil from its bed. These surgeons, however, are in my experience in the minority, and most prefer that deep narcosis in which the fauces are absolutely slack in spite of severe pushing or dragging. It is this form of anæsthesia, therefore, that the anæsthetist is commonly expected to procure.

There are, of course, several means by which this can be done, all of them providing a perfectly satisfactory condition so far as the operator is concerned. They are not, however, all equally safe, nor do they all provide a sufficient anæsthesia for the same length of time. For example, in the days of the partial removal of tonsils by rapid operation "gas and oxygen" was often an admirable anæsthetic in adults. In suitable subjects it can be employed to-day for the complete removal, but only if this is to be effected without any dissection. Even if the dragging forward of the tonsil is necessary to ensure its complete encirclement by the guillotine or snare, then "gas and oxygen" rarely provides for a comfortable operation if both tonsils have to be removed. The case of ethyl chloride is similar, although it must be said for this anæsthetic that it is of the utmost service in children. Thus, in out-patient practice at St. George's Hospital we have for years employed it in young children who have both adenoids and tonsils removed, and we find it sufficient for complete removal when this is done by the guillotine, even when a small amount of dissection is required too. Naturally much depends on the expertness of the operator; and, moreover, there is not time with ethyl chloride for that attention to bleeding and thorough inspection of the areas operated upon which many operators prefer. That complete enucleation of both tonsils with the guillotine can be performed under these conditions, however, I have seen demonstrated in scores of cases where Mr. H. Barwell has shown the glands with their capsules after removal, and has allowed students to palpate the smooth evacuated beds of the glands in the fauces. It is not the ideal arrangement to handicap the operator in the least degree by the shortness of the anæsthesia, or to let the child cry or vomit or realise its surroundings before it is back in bed. Consequently ethyl chloride in these cases should, I think, only be regarded as a best possible under the circumstances of out-patient operation, and seldom as the anæsthetic of choice for in-patients or in private practice.

We come, then, to the question of a deep degree of narcosis obtained by the use of ether or of chloroform, or of both. From the point of view of bleeding and of mucous secretion, ether from any closed apparatus should, I think, be avoided in these cases. It used to be a favourite plan to induce anæsthesia by "gas and ether," keeping up the ether for five minutes or so till the patient was well charged with the drug, and then to give chloroform on an open mask for a minute or two, allowing the congestion previously induced to pass away. No doubt a quite sufficient narcosis is obtained in this way, and can be maintained efficiently by continuing chloroform through the tube of a Junker's inhaler whilst the operation is in progress. Yet I believe the condition is never so satisfactory as that obtained if the anæsthesia is induced without any, or only an extremely short, employment of closed apparatus.

Generally speaking, the best method, both for children and adults, consists, I believe, in giving a preliminary dose of atropine, gradually inducing a very deep degree of narcosis by a mixture of chloroform and ether, supplemented in some cases by a few minutes of open ether, and in some adults by a very few minutes of ether from a Clover's inhaler. There should be no congestion whatever by the time the operation begins, and the atropine prevents any undue mucous secretion. The anæsthesia thus obtained generally suffices for the entire operation. When it does not, chloroform is used from a Junker's inhaler or the open mask is reapplied. The same extreme degree of narcosis necessary during dissection need not be kept up whilst the bleeding is being stopped, in the case of operators who prefer to see deliberately to the stopping of all hæmorrhage after each tonsil is removed. The fear of a varying depth of narcosis is, I believe, largely a fetish. So long as there is no return to consciousness it is far better that the absolute absence of reflexes kept up during removal of the tonsil should lapse, whilst the hæmorrhage is receiving attention, to a condition in which the coughing reflex and the faucial reflex are present. To allow this is, moreover, to minimise the possibility of secondary or recurrent hæmorrhage, which is a mischance not to be ignored, at any rate after enucleation in adults of fibrous and adherent tonsils.

The importance of the position of the patient during operation varies completely according to the way in which the bleeding is treated. If, as with some operators, there is constant sponging, the position of the head is a matter of indifference, for no blood is allowed to descend. If, on the other hand, there is no attempt to stop the bleeding or to interfere with it in any way until the operation is completed, then obviously steps must be taken to avoid the possibility of inhalation of blood during removal of the second tonsil. It is better to achieve this by the safety of the position adopted than to have to rely upon a light degree of narcosis permitting coughing—better, at any rate, from the surgeon's point of view. Position, in fact, must be settled entirely in accordance with the operator's convenience, the anæsthetist realising, however, that in some positions, unless there is constant sponging, he cannot with safety provide a deep narcosis. Sitting, or lying with the head on one side, or with the head straight, are equally satisfactory in the case of operators accustomed to the respective positions, but the anæsthetist has certainly to vary his practice to suit the circumstances and to keep a keen eye upon the exact extent of narcosis maintained.

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PAIN IN RENAL AND VESICAL LESIONS:

ITS CHARACTERISTICS, ITS ANOMALIES, AND ITS MISGUIDING MANIFESTATIONS, WITH 12 ILLUSTRATIVE CASES.

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(*Concluded from p. 729.*)

(*j*) IN *malignant tumours* of the kidney hæmaturia is the most prominent symptom, and is present frequently for a long period before pain is complained of. Hæmaturia is the symptom which most frequently induces the surgeon to make an examination of the loin, but, for the reason that it is unassociated with pain, it is often allowed to go on without a sufficient regard to consequences. The belief that malignant disease is necessarily associated with pain has, unfortunately, got a firm hold of the professional mind as well as that of the public. The absence of pain is therefore regarded as a good omen; but the absence of pain, from a diagnostic point of view, is a great misfortune. The most easily appreciated danger-signal is wanting. In the early stage pain is often absent, and sometimes especially in sarcomata, the whole course of the disease is practically painless. Suspicion is not aroused, and rapid progress takes place before the nature of the malady is even suspected.

CASE 9. *Unilateral painless renal hæmaturia during nine months, continuous at first, afterwards intermittent; blood from left ureter only, no shadow; round-celled sarcoma of left kidney; nephrectomy.*—The interest of this case is the entire absence of pain and the absence of swelling in either renal region. The diagnosis was made by a cystoscopic examination only. Nine months prior to examination the patient had a moderate symptomless hæmaturia, and he was able to resume work in a month or so. In four weeks thereafter he had a second hæmaturia when the bleeding became intermittent, being sometimes absent for a day at a time. Blood clots were passed. Otherwise there were no symptoms. The kidneys could just be felt and pressure did not produce pain. No shadow. Urine normal unless during the attacks of hæmaturia; bladder normal, but blood was seen escaping from left ureter only; healthy urine from right kidney. On exploring the kidney the upper pole was found to be occupied by a spindle-celled sarcoma about the size of a duck's egg. The tumour was firmly adherent to the diaphragm, so that the removal of the kidney was difficult.

In malignant disease the pain, when present, is most severe in the situation of the affected kidney, but, specially in the later stages of the disease, it may extend to distant parts. In character it is dull and aching, but may be paroxysmally increased, though not by movements of the body as in renal calculus. The suffering of the patient is generally more severe in scirrhous cancer than in acute carcinoma or sarcoma. It is frequently the cause of difficulty in micturating, even although the bladder is free from the disease. The pain presents great differences in its character; it may be at first slight, vague, and not constantly present, at other times it is entirely absent, or it may be severe and prolonged. In not a few instances the sense of discomfort in the lumbar region is the first indication of disease. Gradually, as the tumour increases in bulk, the suffering of the patient becomes more intense and more constantly present. At first dull in character, later it becomes lancinating, and may either arise spontaneously or be provoked by pressure, but it is seldom aggravated by movements of the body. When the tumour has attained considerable dimensions, or has invaded the tissues around so as to involve or compress the nerve trunks, the pain, instead of being limited to the lumbar region or hypogastrium of the affected side, may extend to the chest, across the middle line, or to the hip and lower extremities, which may lead to the disease being mistaken during this stage for sciatica or rheumatism.

The points to attend to in diagnosis are: 1. A swelling bulging forwards posterior to and covered anteriorly by the colon, resonant in front, dull behind, which retains a renal form and extends under the ribs. 2. Hæmaturia from one ureter, at first slight and at moderately long intervals, afterwards more frequent and severe, ultimately continuous and alarming. 3. Pain sometimes absent, and when present is constant and is principally due to pressure on nerves; the lumbar plexus causing pain like sciatica or intercostal pain like pleurisy. 4. Pulse and temperature normal. 5. No shadow, and no tubercle bacilli present.

(*k*) *Infarction* of the kidneys may be simple when a non-infected embolus is carried to the kidney and causes a thrombosis. Then pain may be induced by a secondary hyperæmia, but it is seldom severe or lasting. But if the embolus is infected a circumscribed suppurative nephritis is established, when the pain is sudden in its onset and stabbing in character and limited to the umbilical area in the early stage, but soon extends to the whole lumbar region. The abdominal walls become rigid and tender, and the kidney is difficult to palpate until pus forms, when a fluctuant swelling can be discovered. The case then presents the characteristics of a perinephric abscess already described.

(*l*) *Nephralgia* is probably a misleading term, and is as unsuitable as "essential neuralgia" as applied to the kidney. These sudden attacks of severe pain in the kidney are due either to an abrupt obstruction to the escape of urine from the ureter or to a temporary passive hyperæmia from torsion of the renal veins as already described under movable kidney or backward blood pressure in cardiac disease.

(*m*) *Aneurysm of the renal artery* seldom causes much pain, and when confined to the renal pelvis the only symptom may be hæmaturia. The pain

when present may be accompanied with pulsation and the condition is liable to be mistaken for rupture of the kidney with hæmaturia. Aneurysm of the renal artery not of traumatic origin is very rare.

(*n*) *Rupture of the kidney* is a common accident, and the symptoms depend upon the extent of the injury. When the spine is acutely bent upon itself, the kidneys, being firmly bound to the column, are made to describe a contortion similar to that of the spine, as a consequence of which not only may the convex aspect of the organ be lacerated and torn transversely, but the sudden jerk may force the kidney away from the middle line and tear the pelvis or the ureter. The blood may therefore escape in two ways—into the tissues surrounding the kidney, where, if the patient survives, it may give rise to perinephric inflammation and abscess, or by passing down the ureter it may give evidence of the injury the kidneys have sustained. But while laceration of the kidney may occur without a bruise in the loin, in the majority of instances a blow upon the lumbar region is the direct cause.

There is not much difficulty in diagnosing this form of hæmaturia. The history of a lumbar sprain or of a blow or crush on the loin, indicated perhaps by ecchymosis, leads one to suspect rupture or contusion of the kidney. Severe damage to the kidney may, however, exist independently of any injury to the other abdominal organs, and may of itself prove rapidly fatal; but in the majority of cases there is evidence of violence elsewhere, and there are symptoms of rupture of other internal organs, especially of the spleen and liver. Generally there will be marked and rapid collapse, pain in the course of the ureters as well as in the lumbar region, retraction of the testicle, difficulty in micturition, or even anuria.

When the rupture is on the surface of the kidney only the pain may be sharp and severe, but on account of injury to other parts it is difficult to estimate how far the renal lesion is to blame for the suffering. Renal colic may be induced by clots forming in the pelvis or ureter.

Frequently the production of pain is by no means easily explained, and may be due to reflex influences producing disorders in other organs. A good example of this is the pain observed in cases of movable kidney. On one occasion the pain may be of strictly renal origin and due to a transitory hydronephrosis; at another time there may be no dilatation of the pelvis of the kidney, but the patient may suffer from intestinal colic and great flatulent distension. The acute pain which is so commonly met with in diseases of the kidney so closely resembles the paroxysmal pain produced by spasmodic contraction of the intestine that the term colic has been applied to it, although quite unconnected with any disease of the alimentary tract. Frequently cases are encountered in which the kidney is the seat of stone, but the pain is not referred to the renal region, and being accompanied by nausea, loss of appetite, and vomiting, is very liable to be mistaken for intestinal or other forms of colic.

It would be well now to consider the points of distinction between paroxysmal pain in the abdomen due to conditions most likely to give rise to suffering simulating renal pain: (*a*) Spasm of the bladder; (*b*) uterine colic; (*c*) abdominal tumours; (*d*) in gall-stone; (*e*) in appendicitis; (*f*) intestinal derangement; and (*g*) in lesion of the lumbar and dorsal nerves.

(*a*) In *spasm of the bladder* it must be remembered that pain may be experienced in the urinary tract over an area distant from the actual site of the disease. We find that occasionally in impacted calculus of the kidney the pain is referred to the bladder; conversely, in diseases of the bladder the suffering may be most intense in the lumbar region. Spasm of the bladder is generally caused by the presence of some irritant, either in the viscus itself or in some other part of the urinary tract. Ulceration or inflammation of the kidney may produce such an intense spasm in the bladder that it leads the patient to concentrate his attention on the latter organ. Generally, however, spasm of the bladder is the result of the presence of a stone blocking the exit and preventing the escape of urine from the viscus; to ulceration, especially of a tuberculous nature; or it may be induced by morbid lesions in adjacent organs, such as the uterus or rectum. The pain is interrupted, there is a marked sense of constriction in the lower part of the pelvis, and the irritation may extend to the thighs, to the spine, or upwards towards the kidneys. The bladder may become considerably distended, and as it fills the agony increases, the patient becomes pale, the skin cold and clammy and covered by perspiration; and to distinguish it from the pain produced by renal disease the patient experiences much difficulty in passing urine.

(*b*) *Uterine colic* is mostly complained of at the menstrual period, but is not necessarily limited to it. Associated with sickness, nausea, and vomiting, it is very liable to be mistaken for renal colic; and if, in addition to these symptoms, there is numbness in the lower extremities, at the flexion of the thighs, and retention of urine, the diagnosis is difficult. In the great majority of cases, however, the pain of uterine colic is more severe in the pelvis, it is generally associated with tenderness over one or both ovaries, and there are evidences of deranged menstruation.

(*c*) *Aneurysm of the abdominal aorta and abdominal tumours* may or may not be accompanied by pain, but when they give rise to much suffering, especially if it is paroxysmal, the condition is liable to be mistaken for renal colic. On the other hand, renal pain may simulate aneurysm. In a large proportion of cases of movable kidney, and of renal calculus in emaciated persons, the aortic impulses are exaggerated, and at once attract attention; and, as the pain and pulsation are often associated together in the mind of the patient, the pain is referred to the area of pulsation, and so an incorrect description is given to the surgeon.

In movable kidney and in fixed displacement of the kidney the organ may lie in front of the aorta and be carried forward by each impulse. In aneurysm the pain is most severe in the back, but may extend down the sciatic nerve to the legs. As a rule it is constantly present and dull, with intermittent paroxysmal attacks of severe pain, which generally come on during the night or in the early morning. Beyond these characteristics there is nothing in the nature of the pain to distinguish it from renal colic; the condition must be recognised by the physical signs.

In *tumours of the abdomen* the character of the pain and its duration depend upon the situation and the nature of the neoplasm and the organ primarily involved. The attending symptoms vary greatly, but these and the physical signs are generally sufficient to guide the surgeon. The subject is, however, too large to discuss now.

(*d*) The pain of *gall-stones*, when impacted, very closely resembles that observed in renal calculus. It is, however, more marked in the epigastric region, is associated with jaundice, the voiding of gall-stones, and evidence of a deficiency of bile in the stools.

(*c*) In *appendicitis* the pain at the onset is not very severe, is accompanied by symptoms of acute disorder of the digestive organs, and is associated with swelling in the right iliac fossa, to which area the pain is at first limited; whereas in renal colic the pain is most severe in the lumbar region and downwards to the middle of Poupart's ligament.

(*f*) In the severe pain and colic of *perforation of the bowel*, of *hernia*, or of *intussusception*, the extreme and sudden prostration, the disposition of the patient to remain resting in a flaccid position with the knees flexed, the history of obstinate constipation, retraction of the abdominal walls at the onset, followed by steadily increasing abdominal distension, make the diagnosis easy. The physical signs and the nature of the pulse are generally characteristic.

(*g*) *Neuralgia of the dorsal and lumbar nerves* gives rise to pain in many respects resembling renal colic, and, indeed, a renal affection may be the immediate cause of the nerve irritation. When due to a perineuritis, spots painful to the touch may be found along the course of the nerves or their branches. These are generally a little to one side of the first or second lumbar vertebræ or about the middle of the crest of the ilium. The attacks of neuralgia are of frequent occurrence, and are unassociated with renal disturbance.

Differential Diagnosis of Affections of the Bladder Causing Pain.

(*a*) Cystitis; (*b*) tuberculosis; (*c*) tumours; (*d*) calculus; (*e*) distension—(1) enlarged prostate, (2) stricture, (3) tumour, and (4) calculus; (*f*) rupture; (*g*) pericystitis; and (*h*) cystalgia (coli bacillus lesion in women).

(*a*) *Cystitis* is generally associated with pain and frequency of micturition, but the amount of suffering depends upon whether the inflammation is mild, severe, or chronic, as well as the particular area of the bladder attacked.

In mild cases pain is not a marked symptom except during and immediately after micturition, when the pain is burning in character. In acute cases the onset is sudden, often with a rigor, the temperature is raised and may be distinctly febrile; the pulse is rapid, and the tongue is coated, the digestion disturbed, the stomach and intestine distended with gas, and the bowels constipated.

The patient is unable to sleep because of the pain and frequent call to micturate. As soon as the desire comes it must be gratified—the urgency is sudden and imperative. During the act the discomfort is great, but it is at its termination and for a variable time thereafter that the burning pain is most severe. The patient not only strains to get rid of the last drops of urine, but there is tenesmus.

This is the most important symptom. The bladder contracts powerfully, but the sphincter contracts as well, so that for a time nothing happens; the viscus cannot be emptied. Then the spasm at the neck of the bladder yields for a moment or two, and a few drops of urine are permitted to escape. Repeated evacuations of this kind occur and are associated with severe pain in the rectum, the perineum, and the point of the penis. After the viscus has emptied itself its muscular wall continues to contract and squeezes from its congested mucous membrane a few drops of pure blood.

Between the acts of micturition the patient suffers from a dull aching pain over the pubes, which is increased on pressure and by the gradual filling of the bladder, and as the organ becomes distended a sense of weight and tenderness develops in the perineal region.

Local pain shows itself in three situations: in the urethra, over the front of the bladder, and in the rectum and perineum. Pain in the suprapubic region is usually constant, dull, and aching, while in the urethra it is associated with micturition only—before and during the act, when the bladder is uniformly involved, and principally after the act, when the lesion is limited to the neck and the trigone. When the base of the bladder is seriously implicated, or if the inflammation is very acute, the pain may extend to the rectum and perineum.

Reflex pain may be referred to the kidneys, the umbilicus, the penis, the scrotum, and in rarer cases to the leg and foot. These reflexes have been already described. The symptoms associated with cystitis are: 1. The presence of pus in the urine with infective organisms; in acid urine, bacillus coli, tubercle bacillus, streptococcus pyogenes, and pneumococcus; in alkaline urine, staphylococcus pyogenes aureus and albus and mixed infections. 2. Hæmaturia, the blood corpuscles and colouring matter being well suspended in the urine and not readily forming a deposit. 3. Abundant mucous deposit. 4. Frequent micturition.

CASE 10. *Very painful and frequent micturition from staphylococcus infection of bladder; pyuria and hæmaturia; only 2 oz. of urine retained; acute catarrh of base; instillation of silver nitrate; suprapubic drain; lactic bacillus cultures and irrigation; cure in six weeks.*—The patient, aged 40 years, married, was admitted to the Glasgow Royal Infirmary on August 21st, 1912, complaining of very severe pain during and after the act of micturition, so severe as to bring on sickness and severe headache. She had an inclination to pass urine every half hour, but very little came away at each time, not more than 2 oz. The urine was muddy and bad-smelling, and was always tinged with blood. The urine when passed was alkaline, and contained pus in abundance and "strings" of blood. The only organism found was staphylococcus pyogenes albus.

August 27th, 1912: When under an anæsthetic the bladder was able to retain 4 oz. only, but after treatment to Sept. 6th 7 oz. were retained. An instillation of silver nitrate was used.

Oct. 19th: Cystoscopic examination. The floor of the bladder is inflamed, and there are a number of small prominences on the surface of the mucous membrane in the trigone. These are coated with phosphates, which are irregularly distributed, forming patches and edges. The pure white phosphatic deposit stands out in marked contrast to the deeply injected mucous membrane.

Oct. 29th: Suprapubic cystotomy was performed, and a mass of pulpy granulation tissue was removed from the neck of the bladder. Dec. 6th: Bladder washed out with boric acid solution and filtrate of saurine (lactic acid cultures) for five weeks, without much improvement in the local pain, but with great improvement in the condition of the urine. Yesterday patient had no pain and passed urine naturally. Frequency has greatly diminished. Dec. 10th: The wound is now closed. Symptoms have undergone sudden improvement. Frequency has been reduced to four or five times a day. Dec. 17th: Pain absent for a week. Dismissed. March 20th, 1914: Reported well.

(*b*) *Tuberculosis of the bladder* in the early stage is associated with frequent micturition, but seldom with severe pain. As cystic tuberculosis is almost always secondary to a renal lesion the early symptoms referred to the bladder are probably an example of reno-vesical reflex. It is when the base

of the bladder, especially the trigone and the neck, is attacked that pain becomes a pronounced symptom. When the infection becomes mixed, and the organisms cause decomposition of urea, the urine becomes alkaline; then the suffering of the patient is often excruciating during and immediately after micturition and is often accompanied by tenesmus. It is particularly severe at the end of the act and the area of greatest intensity is in the urethra and glans penis. As in other forms of cystitis the pain is referred to the renal region, over the sacrum, to the groin, and down the thighs.

The symptoms associated with tuberculosis of the bladder are: 1. Pyuria in acid urine with tubercle bacilli. 2. Evidence of tuberculosis in the kidney. 3. History of polyuria and small repeated hæmaturias. 4. Frequent micturition, at first without pain, afterwards with severe pain in the urethra and the point of the penis during and after micturition. 5. Remission of early symptoms for longer or shorter intervals. 6. Tuberculous lesion seen by cystoscope.

(*c*) *Tumours of the bladder* are not characterised by pain; in fact, the absence of pain is one reason why their presence is liable to be overlooked. The cardinal symptom is hæmaturia, often symptomless in the early stages. In hæmaturia the absence of pain is too likely to be looked upon as a good omen, but the absence of pain, from a diagnostic point of view, is a great misfortune. The most clamant feature of disease is wanting. The patient may be alarmed while the bleeding lasts, but when it stops and there is no pain he is willing to regard himself as cured by some drug he has taken; the bleeding recurs, and it is stopped by the same remedy, and again he is satisfied, whereas if pain had continued to be present, as in stone in the bladder, the patient would seek advice and procure relief from his suffering.

CASE 11.—*Hæmaturia during six months, at first small in amount, only occasional, and unaccompanied by other symptoms; later continuous, and accompanied by frequent micturition, finally by incontinence, and severe pain; malignant adenopapilloma occupying almost entire bladder, infiltrating deep structures and surrounding parts; suprapubic cystostomy for drainage; radical operation inadvisable.*—The patient, aged 52 years, was admitted to the Glasgow Royal Infirmary on Jan. 6th, 1913, complaining of hæmaturia of six months' duration. When it commenced it amounted to little more than a tinging of the urine with blood, and was only occasionally noticed. At first the bleeding was unaccompanied by pain, but gradually, as it increased, the patient experienced difficulty in micturition associated with a burning pain at the point of the penis. At first the pain and the bleeding were intermittent, but about a month prior to admission both became constant and increased in degree. Bright red blood clots were passed, and the pain was distinctly increased when the bladder was emptied. Together with these symptoms he had frequency in micturition, amounting to 12 or 14 demands in the 24 hours, and during the last month he lost control completely.

He never complained of pain in the back, but in the lumbar region, on the left side, there was considerably increased resistance, probably due to enlargement of the kidneys, and there was pain on deep pressure along the line of the left ureter.

Since ten days prior to admission the patient was confined to bed without any remission in the symptoms; indeed, with rest in bed the incontinence became worse. The bowels had been regular, but when they were moved considerable sharp pain had been experienced, and this for several days before he was admitted. Thoracic and abdominal organs were normal. The patient was very stout, the skin of a greyish colour and pale, but the mucous membranes and conjunctivæ were well coloured. Urine acid, specific gravity 1010, deeply blood-stained, contained much albumin and a deposit of red corpuscles, and a considerable amount of pus.

Jan. 7th: On account of bleeding I found considerable difficulty in getting a good view of the interior of the bladder, but after several washings a large tumour mass was seen nearly filling up the whole of the interior of the viscus. Jan. 9th: The patient suffered very severe pain and was losing a large quantity of blood, while the quantity of urine passed was very small. A suprapubic incision was made, and a large quantity of recent clot and old laminated thrombosis was removed. A fragment of the tumour was taken for microscopic examination. A drain was inserted and the bladder washed out. Jan. 20th: The bladder was carefully washed with boric acid solution three times daily. The bleeding was markedly reduced and the secretion of urine steadily increased, but the patient's general health was evidently failing rapidly. Under chloroform a careful and complete examination was made, when the tumour was found to be very large in size, almost filling the bladder, infiltrating the deep structures and surrounding parts. The kidneys were enlarged. Tumour an adenopapilloma. Feb. 3rd: Patient gradually lost strength and died this morning.

Pain may result from three causes—septic infection of the bladder, obstruction to the escape of urine, and infiltration of the bladder wall and the neighbouring structures by growth. The first mentioned is liable to occur after the use of instruments for the relief of retention, and when sepsis is established in such cases it is of an acute type and all the symptoms of severe cystitis are set up. The urethra may be blocked by blood clot or portions of the tumour, and pain may arise from over-distension, but the involvement of sensory nerve filaments in the new formation is the cause of greater suffering which is continuous and severe. It may be felt in the urethra, in the penis, over the bladder, in the groin, and down the leg. In the absence of cystitis, pain in the bladder, and radiating along the sciatic nerve and the anterior crural, not confined to the act of micturition, is a sign of malignant disease as distinguished from a benign tumour.

The symptoms associated with tumour of the bladder are: 1. Hæmaturia commencing gradually, a few drops at the end of micturition, without pain, afterwards with attacks of severe bleeding and passage of clots. 2. Frequent micturition without pyuria. 3. Portions of growth may be passed. 4. No crystalline deposit. 5. No X ray shadow. 6. Growth seen with cystoscope.

(*d*) *Calculus in the bladder* is indicated by pain, hæmaturia, and frequent micturition. The degree of suffering depends upon the nature and shape of the stone as well as the condition of the vesical mucous membrane. So long as the bladder is free from sepsis smooth uric acid calculi, even of large size, may occupy it for years without causing much inconvenience. But if infective organisms gain access, decomposition of urea leads to an alkaline reaction of the urine, phosphates are deposited on the surface of the stone, and in place of being smooth it becomes rough and irregular. This change in the character of the surface as well as the urinary sepsis contributes to the suffering of the patient. Therefore, if the stone is smooth and the mucous membrane normal, very little annoyance may be caused. This also happens when the calculus is fixed in a diverticulum if it is lodged behind an enlarged prostate.

Again, pain may be absent when along with a phosphatic stone there is bacillus coli infection of the bladder. The acid reaction of the urine causes the surface of the stone to be eaten into so that it presents a honeycombed appearance. This surface entangles the mucus which comes to envelop the calculus and so protects the mucous membrane

from irritation, while it also prevents the stone from being discovered by a sound. I published a case of this kind some years ago and said:—

CASE 12. On cystoscopic observation I found a white woolly mass occupying the floor of the bladder, the shape of a pigeon's egg, and about the same size. From its appearance and form one suspected the presence of a stone, but on passing a sound into the bladder no hard object could be found. Instructions were given to have the bladder washed out regularly twice a day for a week. At the end of that time another examination was made, and a clear phosphatic stone was found lying in the floor of the bladder covered with flaky mucus. In this case the stone had become completely enveloped in a mucous coating of considerable thickness, so that a sound could not possibly convey to the hand or to the ear the impressions we usually expect in a vesical calculus.

On the other hand, if the stone is composed of oxalate of lime, a rough, heavy, and jagged stone, severe and constant pain is experienced. The pain is increased by movement and relieved by rest, is aggravated during micturition, especially at the end of the act, when the mucous membrane is brought in firm contact with the stone, and may persist for some time thereafter.

The location of pain and the reflex pains are the same as in cystitis. The symptoms associated with calculus in the bladder are: 1. Hæmaturia at the end of micturition accompanied by pain. 2. Frequent and painful micturition. 3. Pyuria and crystalline deposit in urine. 4. X ray shows a shadow in the bladder area. 5. Stone seen with cystoscope.

(*e*) *Distension of the bladder.* When due to atony its wall is sclerosed and its muscular elements are degenerated, sensation is impaired, and little pain is complained of. Likewise, when the obstruction to the escape of urine is slowly developed, as in stricture or enlarged prostate, a dull aching pain in the region is all that the patient suffers. It is when the obstruction is sudden, as in impaction of a calculus or blocking with blood clot, that severe pain is experienced, and this increases in degree until relief is obtained. The most common causes are stricture, enlarged prostate, calculus, and tumours of the bladder.

(*f*) *Rupture of the bladder* causes severe pain in the lower part of the abdomen with a great desire to micturate, and may be the result of external violence, over-distension, or the misuse of instruments. Spasms of severe pain come on at intervals, the abdomen is rigid and tender on palpation, and when a catheter is passed only a little blood comes away. There is marked shock. The history of injury clears the diagnosis.

(*g*) *Pericystitis* may follow injuries to the bladder. When an abscess forms in the space of Retzius there may be intense pain and strangury and great suprapubic tenderness, high temperature, and rigors. Pain is not influenced by micturition, is increased by pressure in front, and the urine is clear unless the abscess ruptures into the bladder. The pain is distinctly local.

(*h*) *Cystalgia* I cannot recognise as a separate disease, although it has been frequently described as such. Cases are undoubtedly met with where women suffer severe burning pain extending sometimes to the perineum, increased when sitting, and travelling is rendered very difficult, causing agony. In these cases a lesion is always found with the cystoscope or the urethroscope.

In addition to the condition just described, a form of irritable bladder is common where the patient is distressed by frequent micturition during the day, and during the night there may be occasional incontinence. The only complaint may be pain and frequency, and although it may be most troublesome and inconvenient to the patient, from the nature of the illness she is liable to hide or minimise her suffering rather than seek medical advice.

The cystoscope shows in many cases congestion around the neck and some hyperæmia of the mucous membrane of the first portion of the urethra; the urine contains a large quantity of mucus and bacillus coli, but no pus. With suitable local treatment the symptoms disappear.

ON THE CONNEXION BETWEEN "SOLDIER'S HEART" AND HYPERTHYROIDISM.

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I WISH to point out the very close connexion there is between hyperactivity of the thyroid gland and the tachycardia and breathlessness seen in cases of "irritable heart" and "soldier's heart." This association is a most important one, since the thyroid gland is eminently amenable to treatment.

These cases of "irritable heart" conform to slight cases of Graves's disease. The pathological condition of the thyroid gland in Graves's disease shows the gland cells irregularly massed, no regular acini, but a mass of actively secreting cells, pointing to some bacterial or other stimulus. This degeneration may occur in a gland which is not enlarged.

There are probably several chemical substances secreted by the thyroid; these different substances may produce the different varieties of the disease, but they are all derived from the thyroid. This is proved by submitting such cases to X rays in order to atrophy the gland. The gland can be reduced to any required and regulated extent, with the result that as the gland grows smaller all abnormal symptoms disappear and the man is fully restored to health. Malignant cells which are actively growing are some of the most easily atrophied by X rays; glandular cells are also readily affected. The thyroid gland in exophthalmic goitre is much more easily affected by X rays than the thyroid of a quiescent bronchocele, which may be explained by the glandular cells in exophthalmic goitre being in a very active condition.

We know the thyroid is excited by mental stress and danger, fright being a not infrequent cause of the onset of Graves's disease. Such conditions are produced in a very severe degree by the war strain—by the responsibility, the danger, the noise, sudden explosions near by, with the accompanying horror and nervous shock, and the constant strain on the attention, added to severe physical strain. History tells us that for years after the Franco-German War the people who remained under the German heel in Alsace-Lorraine were to a marked extent subject to exophthalmic goitre. There are many cases of shell shock which show no signs of Graves's disease, and where one can only suppose the thyroid has not been adversely affected; but other cases show symptoms of hyperthyroidism definitely dated by the patient as commencing only after one such definite shock, or after burial by an explosion.

The tendency to thyroid degeneration is one which runs in families, hyper- and hypo-thyroidism appearing in different members of the family, or in

the same individual at different times; that is, the gland in some families shows marked inability to withstand adverse conditions—it is unstable, and if exciting causes such as overwork, overworry, or pyorrhœa occur, then it degenerates. There are other causes besides nerve strain which help to cause the actual degeneration of the gland. The fact that one cause is to be sought in toxins from the alimentary canal is proved by Sir Arbuthnot Lane, who cures these cases through stopping intestinal stasis by his operation of short circuiting. It is noteworthy that dental caries, tartar, and pyorrhœa alveolaris are, or have been, present very commonly in these cases, but not universally. The thyroid condition persists after all the teeth are extracted; but in X ray work I have found those patients who have had their mouths thoroughly cleansed respond very much more quickly to treatment than those in whom constant oral sepsis persists. I therefore think there is a large probability that pyorrhœa is a common source for the causal germs, though not the only one.

Early cases, such as we are seeing in the base hospitals as a result of the present war, are often unrecognised as to their true nature; above all, the connexion of the various groups of symptoms with changes in the thyroid gland and the importance of this connexion are unrecognised. The result is that these cases drift on for months and months. The patients are often looked upon as being the subjects of shell shock or as neurasthenics, or sometimes as cases of early phthisis, and are sent out much in the same condition as when they came in, to pass almost at once into some other hospital.

That X rays, when properly and vigorously applied, are a specific for exophthalmic goitre I am quite convinced. I have treated these cases with X rays during the last seven years, and the results are most cheering. I have taken over the leavings of both surgeons and physicians, and enabled patients to resume an ordinary healthy life. One thing which cannot be cured is the heart which has been overstrained and dilated for several years; it never becomes quite as sound as it was before, the heart muscle remaining weak, so that the organ is more easily overstrained again than a healthy heart. But I have known patients lying up for weeks in hospital and at home who did not improve, or very slightly, and who did get well with X rays even in the adverse conditions of long daily toil. Some of my old cases come back to me for a couple of X ray exposures when they feel run down and in need of a tonic. I have seen several cases labelled "debility" or "neurasthenia" that were really slight cases of hyperthyroidism which did not respond to ordinary medicinal treatment, but which got rapidly well when the thyroid gland was made a wee bit smaller.

Exophthalmos is often a late symptom in this disease of the thyroid gland, and goitre may never be present.

Many cases with simple enlargement of the thyroid (bronchocele) show no symptoms of hyperthyroidism for a long period, as there is no excess of thyroid secretion into the blood; but a time comes when some of them begin with tachycardia, tremors, &c., indicative of a further change in the gland, and the pathological finding in such cases is that besides the ordinary colloid and gland cells found in every bronchocele there are areas which show alteration of tissue exactly similar to that found in the gland in exophthalmic goitre, evincing that the symptoms of hypersecretion are not due to the bronchocele but to the secondary degeneration of the gland. Thus, one may speak of Graves's disease or hyperthyroidism which is either (*a*) primary or (*b*) grafted on to a pre-existent bronchocele. I have now treated over a hundred cases which include both these groups.[1] Most of the cases in the present war are primary, no goitre having been present apparently before enlistment. There are several groups into which these early cases of hyperthyroidism fall according to which symptoms are the more prominent.

Group 1.—Tachycardia. This is perhaps the most usual group met with. These patients come in for breathlessness or fainting, often quite definitely associated with the effects of some particular shell which has burst in their near neighbourhood or shortly after they were buried by some explosion, and they say quite definitely that they were all right until that sudden great strain. Some have been rendered unconscious by the shell; others have not had such a severe shock. Some have found the strain of training too great, and have been much exhausted by the long marches or other heavy physical work. They suffer from giddiness and weakness. The heart-beats are most characteristic: the frequency may be normal or only slightly quicker than normal when lying down, but on sitting or standing the rate goes up to 90-100 or over, only to quiet down again by several beats on resuming the recumbent posture. The heart is often dilated. A skiagram shows dilatation of the right auricle and rounding of the ventricles. The action is tumultuous. The first sound is short and wanting in tone; this is its main characteristic. The heart may be irregular in force and rhythm, showing poverty of cardiac action. Any murmurs present, though often attributed to valvular disease, are hæmic or come from incompetence due to over-distension and disappear when the heart becomes quiet, unless there has been previous endocarditis from some other cause, such as rheumatic fever. The pulse is markedly collapsed between the beats. There is no œdema of the legs till late in the disease when the heart is failing. Such heart failure, with œdema, is seen in civil practice where the heart muscle has been overstrained for years and is consequently degenerated, but is not seen in these slight early cases, the product of this present war. These patients feel very weak; they suffer from dyspnœa, præcordial pain, palpitation, giddiness, and fainting. Even after treatment, when the heart has resumed its normal beat, the skiagram shows a rounded condition of the whole organ.

Group 2.—Manifest marked perspiration, and tremor which becomes more marked on the least effort or excitement. The tremor is a fine movement of the hand or may be general, or it may show itself in larger jerky twitchings of the muscles.

Group 3.—This group exhibits mainly nerve symptoms. These patients tell you their nerves "have gone to bits," and they are put down as cases of shell shock; but besides the effect that shell shock seems to have on the higher cerebral centres, there is this definite action, which it may have, of upsetting the thyroid gland. These patients are "jumpy" and twitch, they have bad dreams, they sleep badly, the pulse becomes unduly rapid on the least excitement, they dread everything. The medical attendant says they are neurasthenics, but what is meant by this word, and what is the underlying physical condition? Does it not mean hyperthyroidism, whether due to loss of nervous control, nervous exhaustion, or from intestinal toxin, or other cause?

Group 4.—This group shows enlargement of the thyroid as the first sign. This is soft and bilateral in early cases, and may or may not have been noticed by the patient before admission. The swelling is only unilateral where there has been previous benign bronchocele. This enlargement may be so slight as only to be evident when the patient puts his head well back so as to stretch the sternomastoids, and then the fullness becomes evident.

Group 5.—Eye symptoms. Exophthalmos may be the first thing noticed. The absence of wrinkles on the forehead and v. Graefe's sign of jerking lids are more common.

As the cases progress more and more symptoms from the above groups gradually develop. By the time the patient reaches the base hospital two or more groups are usually present, and even then the

[1] See THE LANCET, August 10th, 1912, p. 370, 48 cases reported by me; also Brit. Med. Jour., August 31st, 1912.

true nature of his condition may not be recognised. Common combinations are: tremors, nerves shaky and skin moist; or breathlessness, tachycardia, weakness, and sweating; or nervous twitchings, no wrinkles in the forehead, with raised pulse-rate—in fact, the above five groups may be combined in any proportion. These cases also show some general conditions: they lose weight, feel "good for nothing," are despondent and irritable, and worried by small causes. Nearly all are constipated, though the bowels may be relieved daily, and most of their mouths exhibit various degrees of pyorrhœa and of dental caries.

Treatment.

Of methods of treatment there are three: rest and medicine; surgical treatment; and X ray treatment. If complete success is to be obtained, the general condition of the patient must be attended to, as well as the local affection.

X ray treatment.—This does not deal with the primary cause of the disease, but cures the patient. It is the way *par excellence* to lessen the thyroid gland to any desired extent. The points about this treatment are the following: 1. There is no shock or danger to life as in operation. 2. The reduction in the activity of the gland can be carried on to any desired extent, so as to bring the secretion back to the normal amount. Beyond this myxœdema would be caused, therefore one has to be careful not to go too far. X rays are much more accurate than operations on the neck, as the dose is adjusted exactly to fit each case. 3. There is no pain or unpleasantness. The patient merely lies on a couch and has the X rays applied to each side of the neck over the gland; he does not feel anything and sometimes goes to sleep during the treatment.

One disadvantage of X ray treatment is that it requires several sittings spread over a couple of months or more according to the severity of the case. The length of treatment depends on many conditions; the more X rays are pushed the quicker the patient gets well.

In hospital these soldiers are ideally placed to get well. They are away from their original source of worry and nervous shock, they are well fed and cared for, and they can take rest to allow the heart to recover tone; they are, moreover, away from home worries, and have no daily duties which must be done no matter at what cost to themselves.

Besides having the secretion of the thyroid diminished, these patients require their health to be built up in every way possible. One serious source of delay is that it takes on an average from six weeks to two months to get their mouths cleansed, which is a great, almost an essential, help to treatment. In many cases some pyorrhœa is left behind, which hinders the cure. Another point to be attended to is either thorough abdominal massage or daily aperients to overcome the universal intestinal stasis, of which the patient does not complain, but which is always present. Rest is useful to restore the weakened heart, but I do not keep my patients constantly in bed except where such weakness is very acute; many of them have had months of bed without result before coming to me and are thoroughly weary of it.

The treatment I pursue is to apply the X rays as vigorously as is compatible with safety to the skin. At first I did not filter and got much mild dermatitis, now I give much bigger doses filtered. One Sabouraud dose through one or two millimetres of aluminium as a filter to each side of the thyroid weekly requires about 20 minutes. The results are in some cases slow, in others astonishing. A languid, tired, irritable, jumpy patient gains week by week in mental quietude, gets better tempered, more placid, and feels better and stronger; sleep, digestion, and pulse all improve, and he gains weight. The heart is one of the earliest organs to respond; it first becomes regular, then slows down and resumes its normal size while regaining tone in the first sound. The throbbing in the carotids disappears and there is a strong, full, regular pulse, steady and quiet even in the upright position, though for some weeks longer any excitement or emotion raises the rate. After some time exophthalmos is no longer evident, rarely does it persist. The goitre first becomes softer and then diminishes in size till the neck becomes normal. Even patients who do not show much improvement while undergoing the rays show marked improvement a few months later. The only risk is of temporary pigmentation of the skin which may even go on to slight dermatitis, and later in a few cases to telangiectasis.

The treatment requires much patience and attention to detail on the part of both practitioner and patient, but the good results obtained are quite worth the time and trouble spent, and if more widely used would bring many back to health who now drag on an existence for many months in miserable weakness and ill-health. The difficulties are the time required, and that patients feel so much better that they are apt to be discharged before being fully cured.

The main facts I wish to lay stress on are the following. 1. Fine tremor in a young man is not normal; a healthy soldier returned from the front does not so tremble. 2. Excessive perspiration with tremor is not normal. 3. Great nervousness, dread, and jerky twitchings are not normal. 4. A pulse habitually over 90 is not normal. 5. The condition called "soldier's heart" and "irritable heart" must be caused by something. These are not psychical conditions, to be looked at and labelled, but beyond the reach of help. No; they are one and all suggestive of oversecretion of the thyroid gland, and when so caused can be cured by partial atrophy of the gland. If seen early they can quickly be cured; if left for months they take longer; but they can be cured as certainly as an abscess is cured by opening and draining it.

The following are notes of four cases at Fulham Military Hospital:—

CASE 1.—Private, aged 22. Perfectly well until he enlisted on June 6th, 1915. He felt greatly exhausted while training, finding the long marches especially trying. On July 23rd he was sent to Fulham Military Hospital suffering from "breathlessness and tachycardia." He was kept entirely in bed, but at the end of six weeks there was no improvement. He was intensely nervous, weak, and pale. A skiagram showed a rounded, tumultuous heart.

When I saw the patient I diagnosed hyperthyroidism of the nervous and cardiac types. On Sept. 4th I started X ray treatment to the thyroid. I did not keep him wholly in bed. He showed slight fullness of the neck, there was no pyorrhœa, he was very breathless, his pulse recumbent was 136, and he was so scared and nervous that I could hardly get him to lie quietly on the couch for the first treatment, though later he came willingly. During the next week he had his second treatment; he was still breathless; pulse 104 recumbent. On Oct. 18th, after seven treatments, he was sent on furlough for a month; therefore X rays were stopped. His neck was three-eighths of an inch smaller; there was no dyspnœa or tachycardia; he felt strong and was able to be up all day, and in manner was very much quieter. All this was accomplished in six weeks.

When seen one month later the patient was back at his depôt. He told me he was so well that he could not get his discharge from the army. He was slightly nervous in manner, the pulse standing was 72, all other symptoms were completely gone, his weight had gone up, and he felt strong

and well. He went out rather too soon, and runs some risk of relapse in consequence.

CASE 2.—Private, aged 25. In France from November, 1914, to April, 1915; through Ypres and Neuve Chapelle; sent home in April, 1915, for rheumatism, bronchitis, and frost-bite. On Sept. 2nd he entered Fulham Military Hospital, and was said to be neurasthenic. Weight 8 st. 10 lb. He perspired, had headache, the eyes were misty, but vision was normal; he was losing weight, but his collars had been tight of late.

An X ray examination showed the rib cartilages ossified, and the heart small, rounded, and tumultuous. On Oct. 18th the note of Dr. R. McNair Wilson was: "High blood-pressure, marked vaso-motor symptoms, no gross cardiac lesion, nervous, toxæmia." On Oct. 25th the patient's medical attendant, Dr. R. Dainty, and I agreed that the symptoms were really due to hyperthyroidism, so I started X ray treatment. The patient then had fine tremor, perspiration, pyorrhœa; the pulse was irregular in force and rhythm, 92 recumbent; there was slight goitre. Nov. 11th: Third treatment. Pulse regular, 76 recumbent, pyorrhœa still, goitre less, no tremor, no perspiration, felt better. On Dec. 16th the patient had had seven treatments, delayed by dermatitis. Jan. 8th, 1916: No further treatment. The dermatitis had disappeared. The patient had improved very markedly since the treatment began, and had recovered a healthy condition. He was no longer depressed and good for nothing, and was feeling strong —"better than before Neuve Chapelle." He weighed 9 st. 9 lb., and the pulse was regular, 80 standing. The headaches, tremor, and perspiration had all disappeared, and the patient was able to run without getting unduly out of breath; the goitre had disappeared, and the neck measured one inch less than when X rays were begun, two and a half months previously. The case had responded very well to treatment, and the patient has now returned to his regiment.

CASE 3.—Private, aged 31. In France from November, 1914, to May, 1915. He was buried by the explosion of a shell. Complained of sore feet and excessive perspiration in April, 1915. Admitted to Fulham Military Hospital in June, 1915. He was sent to me to be treated for very excessive perspiration, chiefly in hands and feet. Local treatment did not succeed, and I noticed that the pulse varied from 68 to 100, while he had distinct fine tremor, I therefore changed the treatment to giving X rays over the thyroid gland. After five treatments the tremor was gone and the perspiration had much diminished. The pulse was 80 standing. The patient was discharged, but he would have been better with a few more treatments.

CASE 4.—Private, aged 21. In France from October to December, 1914; sent home wounded. In France again from March to October, 1915. Admitted to Fulham Military Hospital on Oct. 9th, 1915, the case being diagnosed as "palpitation and disordered action of the heart." The patient had suffered from palpitation for four months, which had gradualiy been getting worse, from shortness of breath, and from dizziness and headache. Oct. 26th: Præcordial pain. The heart-beats were hurried, the pulse-rate was 96, and there was fullness of the neck suggesting enlargement of the thyroid. It was decided to adopt the X ray treatment. First treatment: Condition as above. No heart murmurs. Pulse 104, regular; goitre large, soft, and uniform; the neck measured 14 inches. Tremor and perspiration were present—palpitation frequent. Nov. 9th: Third treatment. The patient felt better and the heart was quieter; pulse 100. Dec. 16th: Eighth treatment. Only one attack of palpitation during the last week; goitre smaller, 13⅛ inches; tremor nil; pulse 88 standing. The patient's medical attendant considered him to be a great deal better. Dec. 29th: Tenth treatment. Occasional palpitation; perspiration and tremor gone; pulse 92 standing; goitre 13⅛ inches, almost disappeared; no dyspnœa, dizziness, or headache; occasional pain in the chest still. The patient was up and about all day. The septic teeth and digestive trouble had delayed this case. After a month in a convalescent home the patient has returned to his regiment and is reported to be quite well.

I am now treating with X rays over 20 cases of tachycardia or shell shock each week, and several patients have already been discharged back to their regiments.

I am indebted for the above cases to the kindness of the other medical officers of the Fulham Military Hospital who have allowed me to treat their patients, and especially am I grateful to our commanding officer, Major C. T. Parsons, R.A.M.C., for his constant help and interest in everything which concerns the department.

Nottingham-place, W.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION FOR THE STUDY OF DISEASE IN CHILDREN.

Exhibition of Cases, Tracings, and Specimens.

A MEETING of this section was held on March 24th, Dr. R. HUTCHISON, the President, being in the chair.

Dr. HUGH THURSFIELD showed a case of Rickets in a girl aged 2½ years, with old fractures of both clavicles, both femora, and both humeri, and recent fractures of right humerus and left fibula and tibia. She had marked rickety deformity of the thorax.

Dr. H. C. CAMERON showed a case of Osteogenesis Imperfecta in a girl aged 5 months. Three other children in the family. No history of fractures in any relatives. Born at full time. The baby was small, though not ill-nourished. On admission there was tetany of the hands, and the spasm could be made very marked by rendering the hand cyanosed by the pressure of an elastic band around the upper arm. In a few days this disappeared. Until admission the baby was breast-fed. The shape of the skull was typical. The bones of the skull generally were very thin, and in many places yielded on pressure. The ossification was most defective in the lateral parts of the skull, which were formed largely in membrane, forming persistent lateral fontanelles of considerable size. The skull presented a superficial resemblance to that of hydrocephalus of mild degree. The limbs were somewhat curved and a little short. A thickening due to callus could be felt in the shaft of the right femur. The sclerotics were somewhat blue.

Dr. J. L. BUNCH showed, amongst others, a case of Papulo-necrotic Tuberculide.

Dr. J. D. ROLLESTON showed a case of Transient Hemiplegia in Diphtheria and Diphtheritic Onychia. The patient, a boy aged 5 years, was admitted to hospital on Oct. 6th, 1915, with severe faucial diphtheria on the third day of disease. 20,000 units of antitoxin were given on admission, 16,000 on the 7th, and 12,000 on the 8th. The throat became clean on the 11th. An urticarial rash appeared at the injection site on the 12th, and persisted till the 15th. The same day the heart, hitherto normal, showed some slight left-sided dilatation and an occasional extrasystole, and the child vomited. On the 16th triple rhythm developed and the liver became enlarged. On Nov. 2nd the voice became nasal. On the morning of the 3rd, the thirty-first day of disease, a circinate rash appeared on the limbs. Temperature 97·8° F. During the day the patient complained of abdominal pain, and at 10 P.M. became very pale and almost pulseless. At 1.30 A.M. the face, eyes, and arms twitched, and between 4 A.M. and 6.40 A.M. he had general convulsions. At 11.20 A.M. he was found to have complete loss of power in the right upper and lower extremities. There was slight facial palsy. The right abdominal reflex was less marked than the left. Both plantar reflexes were flexor. There was no ankle clonus. The knee-jerks were absent. He seemed to understand what was said to him, but could not speak. The left index, middle, and ring fingers each showed a bulla on the terminal phalanx. At 7 P.M. he had recovered some power in the right upper limb, but the lower limb was still paralysed. The right plantar reflex was now extensor. He could now speak a few words. On the following morning he had quite recovered his speech and could move his right arm and leg freely. The right plantar reflex was still extensor, but became flexor the next day. The voice remained nasal until Nov. 29th, but no other nervous symptoms developed, and when he was allowed up on Dec. 3rd, the sixty-first day of disease, he could walk without support. In spite of a variety of local applications the lesions in the fingers showed no tendency to heal, but sloughing took place, especially in the middle finger. No membrane was seen at any time. There was no constitutional disturbance nor any rise of temperature. On Jan. 19th, 1916, a culture taken from the lesion on the middle finger showed numerous groups of diphtheria bacilli, and 8000 units of antitoxin were injected. Within a week the lesions, which had been in existence for two and a half months, had completely healed.

Dr. E. B. GUNSON showed a case of Gangrene of the Leg following Diphtheria. The patient, a boy aged 6 years, was admitted to hospital on Jan, 5th, 1915, with severe faucial diphtheria on the fourth day of the disease. He was given 20,000 units of antitoxin on admission, and again on the following day. On the seventeenth day the pulse became markedly irregular, the onset of arrhythmia being followed by marked increase in cardiac and liver dullness. On the eighteenth day there was a sudden onset of acute pain, referred to the right popliteal space. On the following day a ring of discolouration appeared below the knee and the leg became cold. Gangrene of the right small toe and outer aspect of the foot developed on the twenty-second day, and gradually involved the whole of the leg below the level of the knee-joint. Sloughing of the skin appeared at the line of demarcation on the forty-ninth day. Palatal, pharyngeal, and diaphragmatic palsies developed during the fifth and sixth weeks. Amputation of the right leg was performed by Mr. H. S. Clogg, the patient ultimately making a complete recovery.

Dr. C. O. HAWTHORNE showed tracings of a case of Rapid Respiratory Rhythm apart from other Evidence of Disease. The patient, a girl aged 8 years, was under observation in hospital for some six weeks, and no evidence of organic disease was discovered. The respiratory rate was constantly quickened (60 to 80 per minute), and occasionally exceeded the pulse-rate; when the child was asleep, however, it fell to 20 to 25. There were no other symptoms, and save for the rapid breathing the child seemed to be in a normal state of health. When she left the hospital the respiratory rate was about 40 per minute.

Dr. E. A. COCKAYNE showed a case of Paroxysmal Hæmoglobinuria. The patient, a boy, lived abroad until March, 1915, where he suffered slightly from malaria. There was a history of a miscarriage before he was born, and of a still-born premature child two years ago. The first attack of hæmoglobinuria occurred the day after landing in England. He was free in the summer, but in the autumn with the onset of cold weather attacks had occurred fairly often. Previous to the attack the ears and feet felt very cold, but there were no definite phenomena of Raynaud's disease. The child was thin and very anæmic. No definite stigmata of congenital syphilis. The urine during an attack was coffee-coloured and contained hæmoglobin and methæmoglobin, but no red corpuscles and no casts. The Wassermann reaction was strongly positive.

Pathological specimens were shown by Dr. ROLLESTON and Dr. H. C. CAMERON.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

SECTION OF MEDICINE.

The Soya Bean (Glycine Hispida) and its Uses in Physiology and Medicine.

A MEETING of this section was held on March 3rd, when Dr. W. G. SMITH read a paper on the Soya Bean (*Glycine Hispida*) and its Uses in Physiology and Medicine. Attention was drawn to its important dietetic and economic applications, which admit of considerable extensions if its cultivation be extended in our colonies, especially in South Africa. The seeds are free from starch and sugar and have been utilised in the treatment of diabetes. The chief topic of the paper referred to the striking discovery by Takeuchi, a Japanese *savant*, that the bean contains a specific ferment, urease, which rapidly converts urea into ammonium carbonate. The general principles of enzyme action were briefly mentioned, and the modes whereby they operate. The relations of ordinary urea to ammonium cyanate and of sulphur urea (thio-urea) were discussed, and the mutual reversibility of the process in each case was experimentally shown. The almost immediate influence of urease in converting urea into ammonium carbonate was demonstrated, and it was pointed out that urea had recently been discovered in a number of plants, up to as much as 3·5 per cent. in a fungus. A practical point in connexion with urease is its application to the quantitative estimation of urea. The most rapid methods of estimation for routine work are: (*a*) The hypobromite method. (*b*) Folin's process with $MgCl_2$ and HCl. (*c*) The most accurate method is by urease. The ammonia is absorbed by decinormal sulphuric acid.

Dr. T. P. C. KIRKPATRICK asked whether the estimation of urea could be carried out in clinical work, or must the urea be in a pure state.

Dr. A. R. PARSONS complimented Dr. Smith on the clearness with which he had dealt with a somewhat abstruse subject. He could confirm the almost invariable presence of starch in so-called "diabetic foods"—he had once found as much as 60 per cent.—and thought soya bean might prove very useful in this respect. He was very glad to hear of this method of estimating urea, as he had found the hypobromite method unreliable. He would like to know how urease was prepared commercially, and where it could be obtained.

Dr. J. CRAIG said that soya bean had been in use as a cattle food for some time. In some cases cattle had died in a rather mysterious way, and he would like to know whether urease could act on any other nitrogenous substance.

Professor A. E. METTAM asked whether the term "glycine" indicated any connexion with the substance glycin which combined in the kidneys with benzoic acid to form hippuric acid.

Sir J. W. MOORE recalled the fact that a proportion of carbohydrate in the diet was very desirable in diabetes.

Dr. SMITH, in reply, said that the estimation of urea by urease was quite applicable to clinical work, and was, in fact, a very simple and easy method. In the case of cattle urine an estimation was afforded of the allantoin nitrogen also. He considered the name "glycine" quite independent of any other similar term.

SECTION OF PATHOLOGY.

Exhibition of Cultures and Specimens.

A MEETING of this section was held on Feb. 18th, Dr. R. J. ROWLETTE being in the chair.

Dr. W. D. O'KELLY exhibited cultures which were prepared in connexion with the work he was carrying out under Professor E. J. McWeeney for the Medical Research Committee. They illustrated the culture points of differentiation between the bovine and human types of tubercle bacilli. He fortunately succeeded in making direct cultures on the egg medium, thus getting over the difficulty of isolating the organisms without animal inoculation. The only difficulty now was to secure the material uncontaminated; if this were obviated a high percentage of successful direct cultures should result.

Mr. R. M. BRONTË exhibited cultures of tubercle bacilli of human, bovine, and avian type.

Dr. W. BOXWELL showed organs removed from a female patient aged 28, on whom Mr. Henry Stokes had previously performed an operation for the cure of ectopia vesicæ. After removal of the uterus, the ureters had been successfully transplanted into the rectum, and for some time the patient had done very well. Subsequently, however, one of the ureters had broken loose from its new point of attachment, probably, as Mr. Stokes had suggested, through ulceration, due to defective blood-supply in the button of mucous membrane left around the end of the transplanted ureter. A pelvic abscess then formed which opened into the vagina, through which urine was thenceforward voided. The patient ultimately died three months after the operation from ascending pyelonephritis in both kidneys. The interest of the exhibit mainly lay in the relative rarity of this malformation in a female, and in the condition of the surviving ureteral papilla in the rectum. This was quite pervious, and apparently firmly attached, but was in a condition of superficial necrosis, all the transitional epithelium having perished with the exception of one tiny shred on its mucous surface, as shown in microscopic sections. This patient had passed for a boy until the date of the first operation, and neither she nor her people were ever disabused of this impression. She had a slight boyish figure, rather hairy arms and legs, and a deep-toned voice, but the total absence of circumoral hair and well-developed breasts of a woman.

Professor A. E. METTAM showed a specimen of Spontaneous Tuberculosis in a Rabbit.

Dr. J. H. POLLOCK showed specimens of Melanotic Tumour, Metastases in Lungs and Liver, and Portal Thrombosis and Cirrhosis in latter.

Dr. T. T. O'FARRELL showed a Stomach removed post mortem which exhibited two ulcers in the fundus and a carcinoma at the pylorus.

LIVERPOOL MEDICAL INSTITUTION.—A meeting of this society was held on March 9th, Major Charles J. Macalister, the President, being in the chair.—Mr. C. A. A. Dighton related a case of Sarcoma of the Nose and Naso-pharynx. The tumour was removed under chloroform in September, 1914. The operation performed was a sub-labial lateral rhinotomy, and in addition a wedge-shaped section of the upper jaw and palate was removed. The patient was shown. She was healthy and there had been no recurrence.—Dr. F. H. Barendt read an amusing and interesting paper on the Use, Misuse, and Abuse of Soap. He described the various pharmacopœial preparations of soap and discussed their relative value. In his opinion far too much soap was used, he said.—The President and Major Rushton Parker both joined in the discussion.—Captain T. R. W. Armour read an interesting paper on Military Orthopædics, in which he divided these cases into two groups: (1) Disabilities occurring in men under training, such as cases of flat feet, hallux rigidus and valgus, pes cavus, internal derangement of the knee, hysterical deformities of hip and spine, sprains, and old fractures; (2) cases due to wounds or other injuries received on active service. Captain Armour described a series of deformities produced by fractures of the femur, fractures involving the shoulder, elbow, wrist, and hand, injuries to muscles and nerves, and showed several radiographs illustrating the cases. The principles underlying the treatment of each case were discussed and progress described. Reference was made to the value of active exercises carried out under proper supervision as part of the treatment, and the necessity for getting the men to take intelligent interest in their own cases. Several points were brought forward with regard to the adaptability of stumps for the application of artificial limbs.—The paper was discussed by the President, Major Rushton Parker, Mr. G. P. Newbolt, Mr. F. A. G. Jeans, and Captain J. Lloyd Roberts.

LONDON DERMATOLOGICAL SOCIETY.—A meeting of this society was held at St. John's Hospital for Diseases of the Skin on March 21st, Dr. J. L. Bunch, the President, being in the chair.—The President showed, among other cases, a Belgian with a mixed large and small Follicular Syphilitic Eruption on the Trunk of three to four months' duration; the patient also had an atrophic scarring on the left eye, caused by a shell. A most successful transplantation had been performed in this region.—Dr. Morgan Dockrell showed a case of Idiopathic Multiple Hæmorrhagic Sarcoma which had greatly improved under thyroid extract and streptococcal vaccines. He also exhibited a case of Perforating Ulcer in a man who had received nine injections of salvarsan without any appreciable result. The condition was steadily improving under mercurial treatment.—Captain W. Griffith, R.A.M.C., showed a case of Pustular Folliculitis affecting the legs and thighs which had been treated by the Simpson light.—Dr. W. Knowsley Sibley showed, amongst other cases, a girl, aged 16, who had a rather unusual ulceration on the front of both legs, due to sitting before the fire.—Major E. G. Ffrench, R.A.M.C., showed a case of Strumoderma in a youth, the lesions occurring on the face and neck, which had been somewhat improved by applications of the Simpson light.—Captain C. H. Mills showed a case of Syphilis on an old-standing psoriasis. The patient also had a peculiar horny growth on the umbilicus.

MEDICAL MAGISTRATES.—Mr. Barclay Josiah Baron, M.B., C.M. Edin. (the Lord Mayor), and Mr. Colston Wintle, L.R.C.P., M.R.C.S. (chairman of the Health Committee), have been placed on the commission of the peace for the city of Bristol.

THE "STAR AND GARTER" HOME.—The following will act as the consulting staff at the "Star and Garter" Home for Totally Disabled Soldiers and Sailors:—Consulting physician, Sir David Ferrier, F.R.S.; visiting physician, Dr. S. A. Kinnier Wilson; consulting surgeon, Mr. Wilfred Trotter; consulting urologist, Mr. J. Thomson Walker; consulting ophthalmic surgeon, Dr. A. C. Hudson; honorary dentist, Mr. Donald Campbell; honorary surgeon, Mr. Harry Wade.

Reviews and Notices of Books.

The Treatment of Acute Infectious Diseases.

By FRANK SHERMAN MEARA, M.D., Ph.D., Professor of Therapeutics in the Cornell University Medical College in New York City, &c. New York: The Macmillan Company. 1916. Pp. 540. Price 15*s.* net.

IN regarding the group of infectious diseases from the point of view of the therapeutist we might endeavour to divide them into two classes—those for which some specific remedy has been discovered, and those for which none such has so far come to light, and in which, therefore, we are reduced to the practice of merely expectant or symptomatic treatment. We might again subdivide the former class into those, on the one hand, for which some recognised chemical compound or drug is efficacious, and those, on the other, for which some product of vital reaction is brought into play by the use of a serum or vaccine. Hitherto only malaria and syphilis appear susceptible to specific drug treatment, unless the use of emetine in dysentery or of the salicylates in rheumatic fever may be regarded as specific; while the list of diseases for which treatment by serum or vaccine is uniformly successful would narrow itself down to diphtheria, and perhaps tetanus, gonorrhœal septicæmia, and cerebro-spinal meningitis, to which must be added, if prophylaxis is classed as treatment, small-pox, enteric fever, and hydrophobia, and possibly plague and cholera, for all of which preventive vaccination has varying claims to our regard.

The book before us does not attempt any such classification but proceeds on ordinary lines, the diseases being merely arranged in the order which appeals to the author. The list includes rheumatic fever and leprosy, but not acute generalised tuberculosis or gonorrhœa or syphilis. The first two chapters deal with the symptoms of infection such as pyrexia and with the methods of combating them, and with the diet suitable to febrile conditions, which the author urges should be more liberal than is usually considered advisable, in order to make up for the wasting that accompanies toxæmia. He holds that after the first few days the digestive system resumes its activity and can deal with a considerable quantity of suitable food. Plenty of water is also called for. The diseases are then considered separately in full detail, the method involving a good deal of repetition, but being perhaps convenient for rapid reference. Among the advice given we note that the author is not in favour of the use of alcohol in febrile conditions—advice which is very usually founded rather on theory and prejudice than on observation of the effects produced by the drug. He speaks highly of the rectal administration of salicylates in rheumatism, and also of their employment by intravenous injection. He upholds the bath treatment of enteric fever, which has never made much progress in this country, but seems to be largely employed in the United States of America.

The fullness of the advice given as to the treatment of the various diseases should render this book acceptable to practitioners who are called upon to deal with them, and the counsel given is throughout sound and practical. Doses are given both in apothecaries' weights and measures and in the metrical system. A few mistakes are noticeable, as, for example, in placing vaccine treatment

of rheumatism under "complications" of that disease, and in the sentence (p. 500) "glowing accounts of vaccines (*sic*) have followed the use of Hiss' leucocytic extract," in which the word vaccines appears to take the place of some term such as "successes." There are few typographical errors, and the book is well got up and adequately indexed.

JOURNALS.

The Journal of Physiology. Edited by J. N. LANGLEY, Sc.D., F.R.S. Vol. L, No. 3. Cambridge: University Press. February, 1916. Pp. 157–216. Price 4*s*.—The Mechanism of Fluid Absorption from Tissue Spaces, by F. H. Scott. It is well known that the volume of the blood rapidly increases after hæmorrhage, which is due to the passage of fluid from the tissue spaces back into the blood capillaries. The change is rapid and cannot be accounted for by lymph flow. Indeed, it occurs after the thoracic duct is ligatured and after the intestines have been removed. Two theories have been put forward to explain this absorption of fluid: the backward-filtration theory of Landerer (1884) and the osmotic theory of Starling (1896). In the first theory it is assumed that when the pressure in the capillaries falls below that in the tissue spaces the fluid is forced back into the capillaries. According to Starling, there is normally a balance in the production and absorption of tissue fluid between the filtration pressure in the capillaries and the osmotic pressure of the colloids of the blood and tissue fluid. Plasma and tissue fluid are practically identical in their composition in everything except protein. The blood proteins exert an osmotic pressure of about 4 mm. of Hg for every 1 per cent. of protein. Since the plasma contains more protein than the tissue fluid its osmotic pressure is greater, and this greater osmotic pressure should cause an absorption of fluid when the capillary pressure is reduced. It seemed possible to the author that a comparison of the protein content of the blood before hæmorrhage and a short time after it might throw light on the nature of the fluid passing into the blood. The author determined the protein content of the fluid entering the blood-vessels after hæmorrhage in three cases in dogs. Experiments were also made in the blood of the living animal diluted with Ringer's fluid. The salt solution rapidly leaves the blood for the tissue spaces, so any backward filtration is excluded. The author finds that as large or larger increases in the nitrogenous bodies of the plasma occur after injecting Ringer's fluid (when all backward pressure is excluded) as occur after hæmorrhage. After hæmorrhage the fluid passing back into the blood must contain less protein than the plasma, whether it passes back by osmosis or by filtration; it will then necessarily cause protein to pass from the cells into the plasma. An increase of protein in the plasma after hæmorrhage is no evidence of backward filtration, and is consistent with Starling's view that the fluid passes into the capillaries by osmotic action. The author's results are grouped as follows: (1) After hæmorrhage an increase occurs in the total protein of the blood plasma, corresponding to a total protein content of 0·6 to 2·09 per cent. in the fluid which has passed through the capillary wall from the tissue spaces to the blood; (2) injection of Ringer's fluid into the blood leads to a similar increase of protein, even though the injected fluid is leaving the blood for the tissue spaces at a rapid rate; (3) the increase of protein occurring after hæmorrhage may then be attributed to the passage into the blood of fluid from the tissues containing little, and possibly no, protein. The increase is not inconsistent with Starling's theory that the increase in the volume of the blood occurring after hæmorrhage is due to the osmotic pressure of its proteins.—Glycolysis in Diabetic Blood, with a Method for the Estimation of Blood Sugar, by Hugh Maclean. According to the author, the problem of the action of diabetic tissues on glucose is still unsolved, and the question of excessive excretions of sugar in the urine in experimental and ordinary diabetes seems as obscure as ever. Conclusive experimental evidence that in diabetes the tissues have actually lost, either wholly or in part, the power to oxidise glucose is difficult to obtain. Perhaps the said power is by no means lost. Indeed, there does not appear to be any conclusive evidence at present that the diabetic organism as a whole is less able to destroy sugar than the normal one. Evidence is gradually accumulating which points to a lack of power to store sugar in a stable form as a more likely fundamental cause of glycosuria than an ability to oxidise sugar. The heart of a depancreatised dog originally was said to be unable to utilise glucose, and the same obtains in a diabetic heart perfused with Ringer's solution containing sugar. Later experiments show that the heart of the depancreatised dog destroys sugar, as evidenced by the diminished reducing power of the liquid after passing through the diabetic heart. The results of the study of the respiratory quotient point in the opposite direction and would appear to indicate that little or no sugar is destroyed. Normal human blood is known to destroy sugar when incubated at 37° C. There is, however, great difficulty in the accurate estimation of the sugar in small amounts of blood. The author gives a full account of his new method of estimating sugar in blood, for which we must refer the reader to the original. The author finds that there is no decrease of glycolytic power in diabetic blood; if the mechanism of sugar oxidation in the blood is similar to that in the tissues, it must be inferred that the diabetic tissues also possess the power to destroy sugar.—Studies in Calcium Metabolism: I. The Deposition of Lime Salts in the Integument of Decapod Crustacea, by J. H. Paul and T. S. Sharpe. A crab before "moulting" refuses food, lives a very inactive life, and seeks shelter. A crab—in the stage called "Pillans" on the North-East of England—denuded as far as possible of its hard shell, does not increase in size as it does when the animal leaves its shell naturally. The integument becomes more leathery, but calcium carbonate cannot be demonstrated in it. Certain internal conditions must obtain if the very rapid deposition of calcium carbonate is to proceed. Different animals, however, vary considerably in the rate of deposition of calcium. The general results may be summarised as follows: 1. After moulting there is a rapid deposition of calcium carbonate in the shell of decapod crustaceans. 2. In the edible crab calcium phosphate is present in the hepato-pancreas to the extent of about 20 per cent. of the bulk of the gland immediately before moulting. 3. After the shell has hardened this calcium salt is practically absent from the gland 4. The lobster does not store calcium in its gland as the edible crab does, but *Lithodes maia*, the stone crab, shows a slight storage. 5. Oil is present in the gland before moulting. It comprises from 20 to 50 per cent. of the total weight. When the shell has hardened it has almost disappeared, like the calcium salts. The iodine value is in inverse ratio to the quantity of oil and to the quantity of calcium. 6. The volume of blood is markedly increased immediately after moulting, even increased ten-fold. The total amount in circulation is greatly increased, although the percentage of calcium is practically constant. 7. Calcium is probably present in the blood as a salt of a fatty acid, and, since formic and butyric acids have been found to be present in combination with some base in the blood, they are to be regarded as the carriers of the metals. They are the members of the fatty acid group which most easily dissolve calcium salts.—Observations on the Nerve Endings, Receptive Substance and Contractile Substance of Muscle, by D. Noël Paton and Leonard Findlay. The conception that there is a "receptive substance," a peripheral neuromyal mechanism, a substance lying in proximity to the nerve ending, we owe to Langley. The action of curare on the muscles of the cat with nerve intact and then on recently denervated muscle was investigated. The authors think their results show that the "receptive substance" generally remains unaltered for some time after the nerve has ceased to act, and in this condition would give the results described by Langley with curare and nicotine. It is also possible that the "receptive substance" may in some cases have its excitability modified during the process of degeneration of the nerve, and the galvanic response characteristic of the reaction of degeneration may be the result of the degeneration of this substance.—The Cerebro-spinal Fluid. IV. Circulation, by W. E. Dixon and W. D. Halliburton. After epitomising their own work and that of other observers, the authors studied the effects of absorption from the cerebro-spinal fluid of various more or less easily detectable substances in the dog, and also absorption into the same fluid. Some experiments were made with dyes and pituitary extract. Amongst other results we note the following: 1. Substances introduced into the cerebro-spinal fluid appear rapidly in the blood and do not find exit by lymph channels. Readily

diffusible substances, especially if placed in the sub-cerebellar region, appear in the blood with remarkable speed. Adrenaline, nicotine, and atropine produce characteristic physiological effects almost as rapidly as if injected into the venous circulation. 2. Indiffusible substances—e.g., proteins—do not produce these characteristic effects when placed in the cerebro-spinal fluid. Secretin—of intermediate molecular size—diffuses slowly. The diffusion process is most rapid in the sub-cerebellar region and extremely slow in the lower spinal area. 3. The authors hold that it is by the blood and not by the lymph that the fluid which is constantly being secreted finds its main exit from the cranio-vertebral cavity. 4. Some evidence is presented that dyes—methylene blue, carmine, granular Indian ink, potassium ferrocyanide, and iron ammonium citrate, the tissues being subsequently treated with hydrochloric acid—added to the cerebro-spinal fluid, travel along the course of certain cranial nerves, especially the olfactory nerve. In the spinal nerves no dye can be detected in the sheaths outside the spinal cord, nor was dye found in the lymph of the thoracic duct. 5. Diffusion from blood to cerebro-spinal fluid does not occur except in an almost negligible degree with a few drugs—e.g., urotropine. The secreting epithelium of the choroid gland protects the tissue elements of the central nervous system from being bathed with harmful substances. 6. Pituitary extract has no direct action on the secretory activity of the choroid gland. Statements to the opposite effect can be explained by the non-exclusion of an asphyxial condition due to constriction of the bronchioles, which is a powerful stimulus to cerebro-spinal secretion.

ROYAL MEDICAL BENEVOLENT FUND.

AT the last meeting of the committee held in March, 26 cases were considered and £207 granted to 20 of the applicants. The following is a summary of the cases relieved:—

Widow, aged 46, of M.R.C.P. Irel. who practised at Norwich and died in January, 1916. Applicant left totally unprovided for with four children, aged 5 to 19. The eldest has joined the army and the youngest are at school. Applicant's health is bad, and she has no friends. Voted an immediate grant of £5, pending further inquiries.—Daughter, aged 44, of M.D. Edin. who practised at Leamington and died in 1884. Applicant along with her mother managed, with the aid of the Fund, to get along by letting some of their rooms. The mother died recently, and the applicant was unable to manage without a little help. Voted £6.—Widow aged 68, of M.B. Edin. who practised at Bolton and died in 1905. Applicant lost about £700 through a defaulting trustee, since dead, and her only certain income is £10 per year. One daughter, a shop assistant, lives at home and helps as much as she can. Voted £12 in 12 instalments.—Widow, aged 62, of L.R.C.P. Irel. who practised in North London and died in February, 1916. Her late husband was a pensioner both of the Fund and Epsom College. Applicant has no income, and at her age expects it will be difficult to find work. Voted £12 in 12 instalments and referred to the Guild.—Widow, aged 61, of L.R.C.P. Irel. who practised at Mitcham and died in 1914 after a long illness during which all his savings were spent. Applicant is now practically dependent on the hospitality of friends. Relieved three times, £40. Voted £10.—Wife, aged 37, of M.R.C.S. Eng., is in an advanced state of tuberculosis, and her husband is in an asylum. There are three children; the eldest is being cared for by a relative, the second is in an orphanage, and the youngest living with the mother. Relieved once, £18. Voted £18 in 12 instalments, and referred to the Guild.—Daughter, aged 39, of L.R.C.P. Edin. who practised at Earlsfield and died in 1902. Applicant is blind, and is training as a masseuse. Prior to the recent death of her mother, who had a pension for life, they managed. The applicant is now dependent on a relative who has to earn her living. Help wanted for tuition fees. Voted £10.—Daughter, aged 66, of M.R.C.S. Eng. who practised at Plymstock and died in 1879. Applicant has recently lost £30 per annum through the death of a friend. Only certain income £11 per year. Lives with sister, who receives an annuity from the Fund. Relieved three times, £35. Voted £12 in 12 instalments.—Daughter, aged 55, of M.R.C.S. Eng. who practised at Manchester and died in 1898. Applicant managed to earn her own living until an attack of nervous debility a few years ago necessitated her giving up her work. Only income a pension from her late employer of 6s. per week. Relieved twice, £24. Voted £12 in 12 instalments.—Daughter, aged 49, of M.D. Glasg. who practised in Derbyshire and died in 1872. Applicant was left totally unprovided for, and has tried to earn a living by taking in paying guests, but owing to the war has not been successful of late. Relieved once, £10. Voted £10 in two instalments.—Widow, aged 61, of L.R.C.P. Edin. who practised at Dumfries and died in 1908. Was left unprovided for with four children, none of whom are able to help. Only income a pension of £12 per annum from another society. Relieved seven times, £68. Voted £12 in 12 instalments.—Widow, aged 58, of M.D. Edin. who practised in Cumberland and died in 1903. Left totally unprovided for, and tries to earn a living by taking in boarders, but owing to her residence being on the East Coast has been unsuccessful since the war. Has four children, all married and unable to help. Relieved 10 times, £112. Voted £12 in 12 instalments.—Daughter, aged 52, of M.R.C.S. Eng. who practised in London and died in 1895. Owing to exceedingly bad health applicant is unable to take permanent employment. Only income £28 per year. Relieved four times, £51. Voted £12 in 12 instalments.—Widow, aged 47, of M.D. Edin. who practised in Glasgow and died in 1912. Applicant was left unprovided for with seven children. The elder ones are now married and unable to help, and the four younger children are at school. Only permanent income £22 from other charities. Tries to supplement this by taking in boarders, but unsuccessfully. Relieved four times, £72. Voted £20 in 12 instalments.—Daughter, aged 65, of M.R.C.S. Eng. who practised in London and died in 1853. Left totally unprovided for, and has worked in various ways to try to support herself, but was unable to provide for her old age. Her income now from a charity and friends totals £28, and she tries to supplement this by poultry-keeping. Relieved three times, £30. Voted £6 in 12 instalments.—Daughter, aged 67, of M.R.C.S. Eng. who practised in North Devon and died in 1903. Was left totally unprovided for, and her health is exceedingly unsatisfactory, which has prevented her from working. Her only income has been a few shillings weekly from friends. Previous help £14. Voted £12 in 12 instalments.—Widow, aged 46, of L.S.A. Lond. who acted as ship's surgeon and died in 1912. Was left with three children, aged 8 to 24. The eldest is unable to assist, and the others are too young to do anything. Applicant is now working as a typist at £1 per week, but finds it insufficient to keep four persons. Relieved four times, £18. Voted £12 in 12 instalments and referred to the Guild.—Widow, aged 66, of Surgeon in the Army Medical Service who died in 1888. Only income a War Office pension. Was operated upon six years ago for cancer, and had breast removed. Has four children, but all married and none able to help. Wants a little help to furnish spare bedroom so that she might take in a paying guest. Relieved once, £16. Voted £5 through the Guild.

Subscriptions may be sent to the honorary treasurer, Dr. Samuel West, 11, Chandos-street, Cavendish-square, London, W.

New Inventions.

EXTENSION GLOVE FOR CASES OF MUSCULO-SPIRAL PARALYSIS.

THE glove here illustrated is designed to replace the paralysed extensor muscles, maintaining the extended position of the hand and fingers, and the relaxation of those muscles which is essential to their recovery. A leather armlet above the elbow is connected by an adjustable leather strap to the wrist of a stout leather glove. Inside the glove elastic bands pass from the wrist to the top of each finger. These bands pass through wash-leather loops which maintain them in position, and they are so adjusted in tension as to just maintain the extension of the fingers. The effect of the whole is that when the flexor muscles are relaxed and the hand is at rest the fingers are completely extended and the



wrist is slightly dorsiflexed. On contraction of the flexor muscles the fingers and wrist can be flexed and the hand used in an almost normal manner. An important feature is the increase in power of grasp produced by the extension of the wrist. The glove has great advantages over any form of fixed apparatus, for it allows perfectly free movement of every joint and does not interfere with the balance in walking.

The glove is quite inexpensive, and is made by Messrs. Allen and Hanburys, Limited, 48, Wigmore-street, W.

H. S. SOUTTAR, M.B., M.Ch. Oxon., F.R.C.S. Eng.
Queen Anne-street, W.

THE STANLEY HOSPITAL, LIVERPOOL.—At the annual meeting of supporters of this hospital, held on April 3rd at the Town Hall, the Lord Mayor of Liverpool, who presided, said that the past year had been one of exceptional difficulty. Some 60 beds had been placed at the disposal of the Government for wounded and sick soldiers and sailors, and the appreciation expressed by those treated had been most encouraging and gratifying. To meet the increased expenses in all directions he earnestly appealed for £1500. The number of cases treated in the hospital for the past year was 15,075, including 1078 in-patients, among whom were 323 wounded soldiers.

THE LANCET.

LONDON: SATURDAY, APRIL 8, 1916.

The Health of Munition Workers.

IT will be remembered that last year a Committee was appointed with the concurrence of the Home Secretary and under the chairmanship of Sir GEORGE NEWMAN, the principal medical officer to the Board of Education, with the following reference:—"To consider and advise on questions of industrial fatigue, hours of labour, and other matters affecting the personal health and physical efficiency of workers in munitions factories and workshops." This Committee has already made a number of valuable reports to the Ministry of Munitions, and the last four Memoranda[1] are of the first practical importance at the present moment. Munitions are being produced at high pressure, and the Memoranda suggest how, without lessening our output of guns, of shells, and of other appliances of war, we may obtain a supply equal to our needs with greater economy of life and health of our fellow-citizens of both sexes. The inquiries of the Committee are not directed to these subjects only in connexion with the war, nor has its advice an application limited to the munition workers for whose benefit it is promulgated as a matter of urgency. Commercial industry will have to be organised with energy, and factories will continue to be worked at full pressure when war is over, if we are to maintain our national position in the world's markets; and the Committee points out that, to the detriment of both health and wealth, the management of our factories has hitherto been less based upon experimental science than has been the case in the business concerns of Germany, the enemy whose industrial organisation and energy are now standing her in such good stead.

In the Memorandum VII. upon industrial fatigue, the Committee expresses the hope that the study of this subject, now forced into notice by immediate need, may have results that will benefit the industries of the country during coming years of peace. One impression produced by this Memorandum is that in these days of stress we are paying dearly now for errors committed in the past, and for recklessness in regard to health permitted in the nineteenth century under conditions of plentiful labour and industrial expansion. The scientific and physiological aspects of fatigue described in this Memorandum might well have been realised in times of peace, and we ought not to have had to wait until the war arrived for the outlining of practical remedies and the regulation of hours of labour, so that the health of the worker might be conserved and the fruits of his toil increased. Certain industrial undertakings, arising out of the war, have special problems of their own—for example, the risks entailed by exposure to lead, tetrachlorethane, nitrous gases, and nitro explosives. In Memorandum VIII. dealing with special industrial diseases, the Committee usefully draws attention to the existing regulations established by the Home Office in 1901 in regard to the risks of contact with lead, but it does not appear that the handling of bullets gives rise to serious lead poisoning. The symptoms of poisoning due to tri-nitro-toluol (T.N.T.) are described and measures for minimising the risk are outlined. Similarly the eczema arising from contact with tetryl, or tetra-nitro-methyl-aniline, is referred to, and here again protective measures are suggested. The Committee refers to the various leaflets and memoranda, dealing in greater detail with industrial diseases and their prevention, and issued by the Factory Department of the Home Office, and in many directions they have relied upon the assistance of Dr. T. M. LEGGE, the senior medical inspector at the Home Office, whose wide experience has been of the greatest value. In Memorandum IX., which discusses ventilation and lighting, the Committee sets out considerations and suggestions which, it hopes, may prove of assistance to those responsible for the ventilating, heating, and lighting of old factories, and for the planning of new factories and workshops. In Memorandum X. it inculcates the importance of two cardinal principles:—that the prevention of disease is better than waiting till it has to be cured; and that treatment to be effective must deal with disease at its beginning, steps being taken to secure recognition of its presence at an early stage.

The urgency of the demand for increased supplies to our armies in the field has been the cause of the evils which have arisen, and it is recognised that injury to the health of munition workers, where it has occurred, has been largely due to their own patriotic zeal. The Committee has rightly laid stress upon the increase or diminution of output as the most direct test with regard to fatigue, and in explaining this has been careful to supply examples from actual experience, which are likely to appeal more directly to many laymen than explanations of the causation of fatigue from the point of view of the physiologist. Excessive fatigue due to overdriving the human machine is thus placed in its true light, not as a hardship which must be endured by the worker for the sake of the cause in which he is sacrificing his comfort or his health, but as an enemy, to him and to the country, which must be guarded against, because it diminishes production and because any loss of health due to it is a useless and wasteful extravagance. Moreover, the Committee recommends that proper management should take account of the output of particular individuals, and explains that where this has been done variations of individual output have been discovered which have been independent of personal willingness and industry. Two good results thus ensue: it has been possible to detect in individual workers superiority of method, obtaining from their example valuable hints for the instruction of others, and

[1] Memorandum VII., Industrial Fatigue and its Causes. Cd. 8213. VIII., Special Industrial Diseases. Cd. 8214. IX., Ventilating and Lighting of Munition Factories and Workshops. Cd. 8215. X., Sickness and Injury. Cd. 8216. Obtainable from the usual official publishers, or through any bookseller.

also to impose upon each the work best suited to his powers, rearranging and assigning the work in such a way as to secure its most effective performance. In matters appertaining to health, the desirability of watching for early signs of breakdown is insisted upon; in this way only can it be dealt with promptly, so that the worker may return with the least possible loss of time. With regard to accidental injury, explicit instruction is given as to both the institution in a factory of a local dressing station for minor injuries and a central dressing station or surgery for the treatment of more serious cases; the actual treatment which should be accorded in the absence of surgical assistance is also mentioned. A leaflet issued by the Home Office is appended here, containing explanations of a practical character as to what should be done and (of equal importance) as to what should not be done by the injured worker and those in his immediate neighbourhood in order to avoid sepsis and the conversion of a slight hurt into a serious one. In the matter of ventilation and lighting, with the cognate topic of heating, the Committee has recognised the fact that the problems to be dealt with must depend largely upon the particular circumstances of each case, and has set out considerations and suggestions in the hope that they may prove of assistance. The essentials of good lighting are summarised and means are proposed to secure its adequacy, with uniformity of illumination, with protection for the eyes of the worker, and with the avoidance of unnecessary shadows upon the work. Fortunately, as the period of daylight is now increasing, and summer draws near, questions of lighting and heating workshops and factories will become for a time easier of solution, but a considerable amount of night-work will still have to be done, and both by day and night bad lighting has as its results headache and other effects of eyestrain, as well as a diminished output. Ventilation, we are inclined to think, is a more difficult problem for the factory manager to deal with than even lighting, although it, too, becomes easier in warm weather than in winter. The Committee insists upon the necessity for a stimulating as well as a clean atmosphere for workers, but the stimulation of moving air is perhaps not unnaturally liable to be resisted by the workers when the breeze is introduced from outside at a temperature many degrees lower than the interior where they are congregated.

May we express the hope that the weighty precepts which the Committee desires to inculcate will win intelligent appreciation beyond the limits of Mr. LLOYD GEORGE'S jurisdiction as Minister of Munitions? If we leave out the passages referring to accidental injuries, there is little in the Memoranda upon which we have commented which might not be applied with equal force where work is being done in offices under various other departments in connexion with the war. A large host of clerks, typists, and other sedentary workers of both sexes is being employed, and has been ever since the war broke out, in operations which require unremitting attention, and for spells which have no parallel for similar occupations in time of peace. For these men and women unduly long hours, lack of weekly and other holidays, excessive night-work, bad lighting, and bad ventilation are no less to be deprecated than for the more laboriously occupied munition worker. And the result must always be the same with all classes of workers—injury to health, temporary or permanent according to circumstances, so far as the individual is concerned, and as far as the public is concerned diminished efficiency, retarded production, and waste of money in paying for that which affords no adequate return.

The Supply of Medical Men for the Navy and Army.

THE War Office, in a statement which is also an appeal, declares that, in order to maintain the supply of medical officers needed in the military services, it is necessary that all qualified medical men up to 45 years of age should fall in with the Enrolment Scheme of the Central Medical War Committee. The statement of the War Office on the subject is published in full in THE LANCET this week, and has, we are glad to say, also received very wide notice in the lay press, its public issue being dictated by the fact that urgency is as much necessary in the interest of the civil community as it is in that of our armies. It is thus made perfectly clear that in the opinion of the military authorities there is only one way, unless new regulations are made, to obtain a sufficiently large body from which to choose those who should enter upon military service and those who should remain in civilian employment; and this way is a very general enrolment. Nor must it be forgotten that the navy also needs medical officers, and that this need may become acuter. The navy has refrained from making any claims upon the civilian profession recently, but its right to whatever it requires is paramount.

The War Office points out that enrolment, the machinery of which is already being conducted by three representative bodies for England and Wales, for Scotland, and for Ireland respectively, does not imply that the enrolled medical man will be at once called up for service in the Royal Army Medical Corps; this we have stated on several occasions, and we are glad to read the official endorsement. As a matter of fact, the enrolled man may never be called up, and in any case will not be requisitioned until the proper time for his services to be accepted has arrived; and that time will be ascertained by a careful consideration of all the circumstances concerning his practice and the practices of his immediate colleagues, as well as the medical provision for the community which, in the time of peace, he serves. It is in this way that the Enrolment Scheme should lead to those medical men being selected for the services who can best be spared by a particular date and from a particular place, a properly proportioned regard being paid to the needs of the three parties concerned, the fighting organisation, the civil population, and the medical officer. We hope, indeed we expect, that the clear words of the War Office will remove some of the doubts which have been

experienced by the members of the medical profession, both as to the need for additional medical men in the Royal Army Medical Corps and the practicability of the method chosen by the Central Medical War Committee for meeting that need. The Enrolment Scheme, if entered into by a large majority of the constituency concerned, should ensure an equitable distribution of the burden as it affects the medical profession; and in order to avoid the alternatives of haphazard recruitment or arbitrary demand, the War Office has officially decided to rely upon the Central Medical War Committee, and the corresponding Committees in Scotland and Ireland, to meet the shortage in the Royal Army Medical Corps as it occurs. The extent of that shortage is not suggested, in so many words, by either the navy or the army; but it is clear that it must depend upon the course of the war and the rapidity with which additions are made to our fighting formations.

The Central Medical War Committee has been subjected to an extraordinary amount of criticism. Distrust of its policy, its actions, and indeed of its morals, has been widely suggested, and the number of times is very great that questions have been asked in Parliament having as their aim the extraction from the Government of some admission that may be damaging to the status of the Committee. As far as can be ascertained, the Committee has worked steadily for the good alike of the medical profession and the community. We are glad, therefore, to see the Committee and its Scottish and Irish similars described in the War Office statement in the following terms:—

> These Committees include representatives of the Royal Colleges of Physicians and the Royal Colleges of Surgeons, of the Universities and Medical Schools, and of the British Medical Association, and have associated with themselves in their work representatives of the Government Departments mainly concerned. The Committees have an organisation of representative local committees in all parts of the three countries, from which they obtain local information and advice, and they work in daily contact with the various Government Departments concerned. Furthermore, for the purpose of considering and advising, through the Central Committee, on cases in England and Wales having such special features as exist, for instance, in regard to the staffs of the metropolitan hospitals, a Committee of Reference has, with the approval of the War Office, been now established by the Royal College of Physicians of London and the Royal College of Surgeons of England, acting jointly.

May we hope now that all medical men will work to assist the Central Medical War Committee in promoting the Enrolment Scheme and in finding the fittest civilian medical men to serve in the navy and army? The Enrolment Scheme becomes an essentially fair one, seeing that the Central Medical War Committee has decided to call up no practitioners under it unless and until 75 per cent. of those medical men, who on Jan. 5th, 1916, were of military age, have enrolled or received a commission.

THE LATE MR. W. B. RICHARDSON.—William B. Richardson, late senior surgeon to the Victoria Hospital, Blackpool, died suddenly on March 30th, in his sixty-ninth year. He became a Member of the Royal College of Surgeons of England in 1875, and had been in practice for 40 years in Blackpool. He was one of the founders of the Victoria Hospital and generously supported that institution, of which he was honorary surgeon for 20 years.

Annotations.

"Ne quid nimis."

THE BUDGET AND THE MEDICAL PROFESSION.

THE Fourth War Budget is of the colossal magnitude which was to be expected in view of all the circumstances, and in its main features it is so clear that we may take it for granted that our readers are already acquainted with their main purport. It is doubtful if it was generally expected that the income-tax would be raised in quite the manner employed or to such high figures; but the announcement that there is to be no increase in this respect on naval and military pay will be a welcome relief to the large numbers of our profession who are doing their duty with the forces, The rest of us will bear the graduated increases, which range from 5*d.* in the £ on incomes above £500 and under £1000 to 11*d.* on incomes under £2000, with that cheerfulness with which medical men usually shoulder their share of the responsibilities of citizenship. The increases on incomes between £2000 and £2500, which are more onerous, do not affect a large proportion of our unwealthy class. Those who are so fortunate as to possess unearned incomes will have to pay an addition of 6*d.* in the £ on incomes between £500 and £1000, and of 1*s.* in the £ on incomes above this sum and below £2000. The new proposals for taxation introduce some features of particular importance to the medical profession. The raising of the licence duty on motor-cars will affect the practitioner in proportion to the horse-power of his car. It will fall more heavily on the owners of American cars, and especially on those who have the "Ford" car, the duty on which is raised from £6 6*s.* to £18 18*s.* This represents a serious difference in annual outlay to a man whose practice is not a large one, and indeed the doctor is being hard hit at the present time in connexion with his motor-car, which he cannot put down as it has become indispensable to him in the working not only of his own practice but quite possibly of the practice of an absent colleague. The precarious supply of his petrol is a source of perpetual worry, he has to pay an exorbitant price for it when he does get it, and now he has to pay double or treble the licence duty. We feel that before the Budget proposals pass into law an effort might fairly be made to give the medical man some relief.

THE SUPPLY OF PETROL TO MEDICAL MEN.

THE form issued to medical men at the end of last week by the National Health Insurance Commission, asking them to supply details concerning their use of motor vehicles and their consumption of petrol, is a welcome sign that our authorities are alive to the urgent necessity for securing to practitioners an adequate supply of motor spirit. If some such course is not taken it may become impossible for some medical men to carry out their professional duties with that expedition which their calling and their attenuated numbers demand. For it must be remembered that several thousands of our colleagues are away from their practices and that the shortage of medical men with the services is still unsatisfied. Complaints have reached us already of the serious position in which some medical men find themselves in consequence of their inability to get petrol, especially in

remote country places. That there would be a sufficiency of spirit for the Government purposes and yet leave an ample supply to meet the real necessities of the public appears to be generally agreed if "pleasure" motoring is put down; the use of petrol, for instance, in conveying the votaries of horse-racing to and from their places of meeting is simply a scandalous waste—that such a thing should be permitted reduces our allies to complete bewilderment and seems to more thoughtful citizens to render the Zeppelin raids, with their attendant horrors, a tonic to be taken gratefully. Given an adequate supply of petrol, the great difficulties to be overcome are, of course, those of proper transport and distribution. There is little doubt that a restriction will soon be put upon the present indiscriminate use of the spirit, but the medical man, who is generally allowed to be among those who would have first claim upon the supply, will unfairly suffer under such a system. A regularised supply will not avail the practitioner in the remote and smaller country villages unless some means are evolved by which he can get without fail that amount of petrol which will enable him to carry on his work. There would appear to be only one way in which the regular supply of petrol to the medical profession can be secured, and that is by the Government taking over the whole of the petrol supply of this country, and using the existing organisations of the two or three great supply companies for its distribution. Otherwise it seems clear to us that many medical practitioners in the country may have infinite anxiety and may be forced to curtail their range of work in a disastrous manner. The supply companies know the requirements of the districts, including every little village and hamlet; and there would be no need for the work of the medical man to be crippled if their services were properly acquired. The question has become acute in some places, and no doubt much more acute than it need have been at the present time owing to the action of many car owners who, having bought largely in view of a threatened famine, hold up not merely the spirit itself, but, what is of even more importance, the tins in which the spirit is stored. Another point to which the authorities should give their attention is the exorbitant price which is now being charged for the commodity. Is this governed by ordinary commercial considerations, or by the demands of the oil trusts? To the medical man the successive increases in prices during the past few months are a very serious charge on his income.

THE DISINFECTION OF SEPTIC JOINTS.

Dr. F. J. Cotton has contributed to the *Boston Medical and Surgical Journal* an important paper on a subject of considerable interest at the present time—the disinfection of septic joints. He strongly condemns the drainage of joints as responsible for the disastrous results obtained in the past in cases of suppuration. Either the attempt to save the joint should be regarded as hopeless, in which case the joint should be laid wide open (not drained), or all efforts should be made to preserve the function of the joint. About 10 years ago, when engaged in washing out gonococcic joints, Dr. Cotton found, both in the small minority which gave a culture and the majority which did not, that the results were better if the joint was sewed up tightly than if it were left to drain through loose suturing, while wick or tube drainage proved, as has since been recognised, disastrous to function. He then treated septic joints (principally staphylococcic with a few streptococcic) by sewing up the capsule tight after irrigation for 15 minutes with a full stream of 1 in 15,000 corrosive sublimate and flushing out the excess with saline solution. He effected water-tight closure of the capsule by mattress and single sutures in such a way as to leave the synovial membrane cut-edge to cut-edge as accurately as possible. Usually the membrane is so swollen as to make this possible. The external wound is left wide open or nearly so, for complete disinfection of the external soft tissues is not practicable. After operation effusion into the joint may or may not occur. If it does, it disappears in one to three days and is not accompanied by pyrexia or much discomfort. With few exceptions, Dr. Cotton has not found traction for the separation of joint surfaces necessary. There was neither pain nor spasm sufficient to indicate it. In about two dozen cases treated by this method there were only two failures. In a case of streptococcic infection of the knee in a man, due to a punctured wound, recurrence took place. The joint was then laid wide open. Later, after vaccine treatment, the granulations were cleaned out from nearly intact cartilage and the divided ligaments were sutured. In the end the patient regained a good leg with 45 to 50 degrees of motion. In the other case a boy had an epiphyseal staphylococcic infection of the knee. The joint was cleaned out and sutured. Later the joint broke down and ankylosis resulted. The following shows the usual result. A sturdy girl aged 10 years was seen in consultation. About two weeks previously she hurt her knee in jumping down a cellar. The knee was greatly distended, tender and hot, but not red. The temperature was 102·5° F. A juxta-epiphyseal infection of the knee was diagnosed. The joint was opened on the inner side and found full of thick creamy pus. The irrigation described above was performed and the joint closed. Through an incision on the outer side a large popliteal abscess was opened and drained. After eight days there was no fluid in the joint, the tenderness was less, and the wound had nearly healed. Though a sequestrum formed in connexion with the epiphyseal line of the femur and a sinus at this spot persisted for a year, the knee-joint so completely recovered that it could be distinguished from the other only by the scars.

AMBARD'S COEFFICIENT.

THE index of urea excretion known as Ambard's coefficient or constant and enunciated by him in 1911 is perhaps less appreciated in this country than on the continent and in America. The formula devised by Ambard may be expressed as— $\frac{Ur}{\sqrt{\frac{D}{W}}\sqrt{C}} = K$, where Ur represents grammes of urea per litre of blood, D the grammes of urea excreted in 24 hours, W the weight of the patient in kilogrammes, C the grammes of urea per litre of urine, and K the coefficient or index of urea excretion. Dr. V. Grossi has lately made some observations on the clinical application of this coefficient which are published in *Il Policlinico* (Surgical Section, Feb. 15th, 1916), the cases consisting of 13 renal tubercle, 9 hæmatogenous infections, 8 calculous pyelitis, 3 renal growths, and 8 surgical affections of the lower urinary tracts. The conclusions arrived at by Dr. Grossi are that Ambard's coefficient is a valuable method for ascertaining the efficiency of the renal function, and is

capable of confirming in its extreme limits a fatal prognosis or of advocating caution as to operative intervention. It is superior to colorimetric methods in cases where ureteric catheterisation is impossible. The interpretation of the coefficient must be made in each case based on its various factors, and must not be taken as an absolute number. The significance and pathology of uræmia and of Ambard's coefficient are far from being clear; in the present-day state of our knowledge they must be regarded as ordinary signs which merit great importance and extended application similar to the presence of albumin in the urine.

THE CORTICAL REPRESENTATION OF MACULAR AND PANORAMIC VISION.

THE last number of *Brain* (December, 1915) contains a valuable contribution to the study of the complexities of the cortical representation of vision, in which Dr. Byrom Bramwell, of Edinburgh, Professor J. Shaw Bolton, of Leeds, and Dr. William Robinson, of the West Riding Asylum, Wakefield, have collaborated. The case is that of a man who was seen originally by Dr. Bramwell as long ago as February, 1886, when the patient was 45 years old. His complaint was loss of vision, which was said to have come on suddenly with an attack of what appeared to be uræmic convulsions in June, 1884. On examination the loss was found to consist in complete abolition of peripheral vision, with very marked reduction of macular vision. Dr. Bramwell saw the patient at regular intervals up to his death from pneumonia on Oct. 21st, 1910. During 24 years the condition remained practically speaking unchanged; macular vision improved slightly, while peripheral vision remained completely obliterated. Throughout the whole course of the case there was no motor paralysis, loss of sensibility, or any form of aphasia. Some five years before the patient's death his ocular condition was independently examined by Dr. A. H. H. Sinclair, of Edinburgh, who reported extreme contraction of the visual fields, the fixation point being probably encroached upon on the left side in both eyes: R. V. = 6/36 uncertainly; L. V. = 6/36 and 6/24 partly. The pupils were equal and reacted to light. Both optic discs had a somewhat leaden-grey atrophic appearance, with extensive shallow cupping. The brain lesions were eventually found to consist in extensive destruction of the white matter and part of the cortex of the left occipital lobe and also of the right occipital lobe, apparently the result of old embolic softenings. The pathological investigation was exhaustively worked out by Professor Shaw Bolton and Dr. Robinson. On the right side the lesion, which was mainly on the outer aspect of the lobe, reached the occipital pole and nearly to the outer extremity of the calcarine fissure; nowhere else in either hemisphere did the lesion come into even the approximate neighbourhood of the cortical visuo-sensory area. The cortical extent of the latter was delimited on both sides by laborious histological methods, and ascertained to be more or less strictly normal in distribution—i.e., embracing the calcarine fissure and its immediate vicinity. Pathologically speaking, no defect was discoverable in the cortex of the calcarine fissure and that quite adjacent to it, whereas the cortex of the whole peripheral portion of the visuo-sensory area was the seat of a simple atrophy involving mainly the three outer layers of the grey matter. The surrounding visuo-psychic cortex exhibited little or no abnormality. The conclusions drawn from this case are that the calcarine core of the pear-shaped visuo-sensory area serves as an anatomical basis for macular or central as distinct from non-macular, peripheral, or panoramic vision, while the latter is represented in the surrounding and remaining visuo-sensory cortex. It is probable that human macular vision is an evolution dependent on the development of the faculty of using corresponding parts of the retinæ simultaneously, and that it is superposed on the neuronic apparatus for panoramic vision, the two types shading into one another. The writers of this paper are to be congratulated on the patience with which they have followed up and investigated so striking a case.

NITROGEN: ITS VIRTUES AND ITS VICES.

PERSONS who talk of the importance of chemistry in this war are usually talking of one thing only, though they may not know it—and that thing is nitrogen. The chief chemistry of the war is practically centred on nitrogen. Recognising this fact, it is strange to think that we live by breathing an atmosphere containing 80 per cent. of this element which in certain combinations is dealing out death on an appalling scale in all the fields of action. There are practically no useful explosives employed in which the action of nitrogen is not concerned. Without its aid the great ships at sea could not be sunk, or innocent victims on land killed, or property destroyed by the aeroplane and dirigible; while it serves to mow down whole columns of men in the field, for rifles, howitzers, machine-guns, and grenades are all dependent upon, and made terribly deadly by, the offices of nitrogen. We every day pass on to our lungs something like 450 gallons of nitrogen per 24 hours, which would be enough to make 30 pounds of tri-nitro-toluol, or 40 pounds of gun-cotton. In our early training in the elements of chemistry we were wont to regard nitrogen as a singularly uninteresting gas on account of its negative behaviour. It did not burn like hydrogen, it did not support combustion like oxygen, and, in short, its presence was generally assumed because of its inactivity and because it did not directly respond to any test. And yet this element is the greatest of all as a munition power; it is hardly an exaggeration to say that applied nitrogen is going to be a factor in deciding the issue of the war. It is remarkable, also, that this element forms the central figure in the protein group or tissue-repairing material of our foods. To say that without protein we die, practically means that without nitrogen we die. The gas without positive tests is as necessary in one form for our support as in other forms it is ready to destroy us. Nitrogen's power depends in the first place on the fact that it carries in oxygen to compounds which are thus rendered explosive, turning all the elements into a huge volume of gas, itself being set free. The very inertness of nitrogen, or its objection to affinity, means that on the least provocation it will easily release its partner oxygen, handing this over to the combustion of other elements present, with the formation of volumes of gases, the nitrogen returning to what is apparently its congenial condition, the free state. As a fertiliser in the soil nitrogen acts as a stimulant and supplies the necessary nitrogen to the plant. In other words, it is a plant food. Thus the remarkable thing about nitrogen above all other elements is its power to destroy life or to sustain it according to the associates with which it is in company. With

certain accomplices it forms death-dealing explosives, with others it become a nutritive material. It is the essentially romantic element, devil or god, according to its associations.

THE TREATMENT OF LEPROSY BY CHAULMOOGRA OIL.

WE have on a previous occasion discussed in these columns[1] the treatment of leprosy by chaulmoogra oil, a remedy which is one of the few to retain a reputation after an extended trial in what is regarded by many writers as a hopeless disease. In a recently published special bulletin of the United States Public Health Service[2] entitled "Studies upon Leprosy," Dr. George W. McCoy, director of the U.S. Leprosy Investigation Station, Hawaii, and Dr. Harry T. Hollmann contribute an article giving a summary of the state of our present knowledge of the treatment of leprosy by chaulmoogra oil. These observers, in view of the interest which has been displayed of late on the subject, were led to review the current literature and to place on record their results with this remedy in the Hawaiian Islands. Most of the writers on the employment of this oil in the treatment of leprosy, including, among others, Manson, Scheube, Castellani and Chalmers, Morrow, Hutchinson, Sandes, Ashburton Thompson, and Dyer, express opinions more or less favourable concerning it. The theory of its action seems to be that it increases the number of leucocytes, and that it also increases the bactericidal properties of the blood. Some of its derivatives have been employed, notably the gynocardate of magnesium, which was used many years ago by Dr. Phineas Abraham. In THE LANCET of Feb. 5th Sir Leonard Rogers published a Preliminary Note on the Use of Gynocardates Orally and Hypodermically in Leprosy, in which he stated that he had obtained improvement both in anæsthetic and in tubercular cases more rapidly under the influence of hypodermic injections of sodium and potassium gynocardates than under any other treatment he had tried, including nastin, as also chaulmoogra oil and gynocardic acid by the mouth. He therefore urged others to give this method a careful trial. Referring to the pain produced by the hypodermic injections, he attributed this to palmitic acid present as an impurity, but we have been assured by Mr. W. H. Martindale that palmitic acid is one of the natural constituents of chaulmoogra oil, so that it cannot be regarded as an impurity, though different samples may vary in the amount of this acid that they contain. Mr. Martindale, while recognising Sir Leonard Rogers's high authority, doubts whether the presence of palmitate is the cause of pain complained of. Mr. Martindale has divided the mixture of acids obtained from genuine chaulmoogra oil into two fractions which he has converted into the corresponding soda salts termed respectively sodium chaulmoograte "A" and sodium chaulmoograte "C." The "A" salt contains true chaulmoogric acid plus palmitic acid and other acids of high melting points, while the "C" salt contains the acids of low melting points. The "A" represents from 50 to 75 per cent. of the total "chaulmoogric acid" of commerce, the "C" constitutes the rest. This "A" salt is relatively insoluble in water in comparison with the "C" salt, which is extremely soluble. (Compare the solubilities of curd soap containing stearate with pure sodium oleate.) The solubility is, of course, an important factor from the hypodermic injection point of view. Mr. Martindale adds that to break up the "A" salt and free it from palmitate is possible though difficult, so as to test if the therapeutic activity of chaulmoogra oil is really due to true chaulmoogric acid, palmitic acid being excluded, and he has sent out samples of each of these substances to Sir Leonard Rogers. Dr. McCoy and Dr. Hollmann express the opinion, however, that none of the derivatives offer any advantages over the oil itself, which can be administered in several ways, either by the mouth or by hypodermic injection alone, or in conjunction with other substances, such as guaiacol, camphor, or resorcin. Sometimes the oil is prepared for use by washing with alcohol, or it may be sterilised by heat, before being injected hypodermically. When given by the mouth it may cause nausea or give rise to other signs of gastric irritation. The hypodermic injections have at times caused complications such as abscess, nervous manifestations, heart failure, or sudden embarrassment of the respiration, so that the remedy requires to be administered, at first at least, with care and caution. Dr. Victor Heiser, Director of Public Health in the Philippine Islands, has used the hypodermic injections, and in a report published in October, 1914, on 9 cases treated by this method, in whom the treatment was continued long enough to give a fair trial, he stated that 5 of the patients apparently made a recovery from the clinical point of view; 3 showed marked, and 1 slight, evidence of improvement. Dr. McCoy and Dr. Hollmann used chaulmoogra oil at the Molokai leper settlement, Hawaii, in many cases, administering it sometimes in one way and sometimes in another, the majority taking it by the mouth in gelatine capsules. Few of the patients, however, took this remedy alone, for there is always a temptation to give "anything and everything that might possibly be of benefit to the patient." Out of 42 cases thus treated 16 received hypodermic injections for periods varying from 10 to 17 months, with the result that 10 were improved, 4 remained *in statu quo*, and 2 got worse. The remaining 26 patients had not continued the oil long enough to enable a proper judgment to be passed upon its effects. It may be added that in all these cases carbon dioxide snow was applied locally to the leprous sores. The personal experiences of Dr. McCoy and Dr. Hollmann lead them to conclude that chaulmoogra oil is helpful to many, perhaps to the majority, of cases of leprosy. The hypodermic method of administration, while not free from disagreeable complications at times, seems to have given good results, and therefore a further and more extended trial is warranted. They are sure, however, that the use of chaulmoogra oil as at present practised "is not the solution of the problem of the therapeutics of leprosy."

[1] Vide THE LANCET, Sept. 27th, 1913, p. 946.
[2] Public Health Bulletin No. 75, January, 1916, Studies upon Leprosy, Washington Government Printing Office.

SPIROCHÆTAL STOMATITIS.

THE observations of Vincent in 1898 first drew general attention to the form of faucial inflammation with formation of false membrane which is associated with the presence of spirilla or spirochætes and of fusiform bacteria, and the name Vincent's angina is now well recognised as applied to this condition,[1] which had previously been confounded with other membranous affections of the throat. The seat of this spirochætal infection,

[1] THE LANCET, 1906, i., 1261.

however, is not confined to the tonsils and their neighbourhood, but the mouth may be the part attacked, the affection then taking the form of an ulcero-membranous stomatitis and gingivitis. In conditions of lessened resistance, due to overcrowding or other depressing circumstances, the disease may appear in epidemic form, and the importance of this infection among troops is shown in a paper by Captain Frederick B. Bowman, C.A.M.C., which is published in the Proceedings of the Medical Section of the Royal Society of Medicine for March. In the cases which form the subject of this report, embracing both officers and men, constitutional disturbance was well marked, and great depression was a characteristic feature. Ulceration occurred on the tonsils, gums, tongue, and mucous surfaces of the cheeks, and the sublingual and parotid glands were affected. The breath was peculiarly foul, and the patients complained of an offensive taste. The gums became spongy and retracted and bled easily, and the teeth in some instances became loose and tender on being tapped. The temperature varied between normal and 102° F. The infection can be conveyed by dental instruments and also probably by eating and drinking utensils. The causal organisms are readily recognisable in smears stained by methylene blue or Giemsa's stain, and can be cultivated anaerobically in peptone broth along with a little ascitic fluid and a fragment of sterile tissue (Macleod's method). An effective treatment for this condition consists in swabbing the ulcers with a mixture consisting of half an ounce of wine of ipecacuanha, one drachm of glycerine, and three drachms of Fowler's solution, and in cases in which the gums are affected this solution should be carefully applied to all pockets around the teeth. The affection must be distinguished from diphtheria, syphilis, and mercurial stomatitis, as well as from simple pyorrhœa alveolaris. In the form which affects the gums the infection is very obstinate, and owing to the depression produced is of considerable importance from a military point of view as producing prolonged incapacity for duty.

EXPERIMENTAL OSSEOUS SPOROTRICHOSIS.

WE have received from Dr. D'Agata, of the Royal Institute of Clinical Surgery at Florence, a résumé of a paper published by him on this subject. In 1912 he communicated to the Italian Surgical Society a case of primary osseous sporotrichosis of the upper jaw in which the sporotrichium Beurmanni was isolated. From this strain he instituted a series of experiments on rats and white mice, inoculating into the peritoneal cavity and subcutaneous tissue over the bones of the hind limbs a broth culture. Some of the animals died spontaneously, others were killed at different periods from a few days to three months after the injection. In the majority of the cases, from 20 to 40 days after the peritoneal injection, he found the parietal and visceral peritoneum covered with small greyish-white smooth nodules varying in size from a pin's head to a large shot. Histologically they showed three zones, corresponding to the ecthymatiform, the tuberculoid and the syphiloid of French authors. In 10 out of 15 mice thus injected there were osseous foci of sporotrichosis in various stages of evolution in the cartilages, and especially in the epiphyseal regions; there were also cases which showed osteitis of the hypertrophic variety. One of the experiments was particularly noteworthy: that of a mouse injected intraperitoneally and killed after 28 days. In this animal there were only a few lesions in the parietal peritoneum, while in the left tibia there were foci of diffuse osteomyelitis with intra-osseous abscess, and in the neighbourhood of the right tibio-tarsal joint a large serous cyst with a sporotrichositic nodule implanted in the wall on one side. Subcutaneous injections near the tibio-femoral joint almost invariably caused after 20–30 days sporotrichotic inflammatory foci in the peri-articular ligaments, giving rise to local suppuration which frequently discharged externally. In some animals subcutaneous injection produced gummatous lesions at the site of inoculation. Smears from the centre of these showed oval bodies such as have been described as representing the parasitic form assumed by the sporotrichium Beurmanni in human lesions and in those produced experimentally in animals.

DIFFERENT NAMES FOR IDENTICAL SUBSTANCES.

WE have on several occasions referred to the difficulties that may and do arise from the practice of bestowing different names upon identical substances, the position occurring more often in practical therapeutics in connexion with the synthetic products. When a single synthetic product earns more than one name a real trouble to the medical profession is introduced, and we may fairly call upon the great pharmaceutical chemists and scientific drug-houses to assist us by refusing to perpetuate this trouble, an example of which has been brought to our attention this week. The substance p-toluene-sodium-sulphochloramide was suggested as a wound antiseptic by Dr. H. D. Dakin, working in conjunction with Professor J. B. Cohen. This substance has already met with considerable success. The theoretical basis of the work, full details of the preparation of the substance, and the early practical results of its use have been already published.[1] It is said that the name "chloramine" suggested by the scientific workers responsible for its introduction, has already been appropriated, and the new name "tolamine" has been substituted by Messrs. Burroughs and Wellcome, who have registered tolamine as a trade-name for chloramine-T. We feel that it is necessary to point out that anyone ordering the substance as "tolamine" will be using the proprietary name of a particular firm and not the name preferred by the authors of the substance. The designation of the substance as chloramine-T, as suggested by its originators, should, in our opinion, be generally adopted, as the use of different names for identical substances is a serious source of trouble to medical men.

Mr. Charles Yelverton Pearson, M.D., F.R.C.S., has been appointed one of H.M. honorary surgeons in Ireland in the room of the late Sir Charles Bent Ball, M.D.

Mr. S. H. Renshaw has promised £2000 to Bury Infirmary to endow two beds—one in memory of his wife, and one in memory of his son who was killed in action at the Dardanelles.

[1] Brit. Med. Jour., Jan. 29th, 1916.

FOOD ECONOMICS IN RELATION TO THE WAR.

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III.[1]

The Limitation of the Quantity of Food to a Sufficiency.

FOOD not only occupies the unique position among the different forms of wealth of being the only one which is essential to life: it has the further characteristic (in common with a few other commodities, such as alcohol, tobacco, coal, and petrol) that its use involves its immediate destruction. The clothes we wear may last us months, even years, our dwellings may outlast centuries, but the food we eat is rapidly consumed within the body. It will thus be seen that any consumption of food beyond what is actually needful constitutes a net waste of the most important form of wealth, and this at the time when the strictest economy is called for. Those who delight in ethical subtleties might take as an interesting subject for discussion the question whether the thief or the glutton is the greater sinner. It would be open to anyone to argue that robbery is a less deadly sin than gluttony, seeing that the one consists in a mere transference of wealth, while the other involves a useless and even harmful destruction of it. Many people eat more than they require; not a few as much as would suffice for two, nay, even three persons. A saving of wealth running into millions could be effected if only those who exceed were to reduce their rations to the actual needs of the body. Excessive eating not only constitutes a waste of national wealth, it also injures the health. It is a trite but true saying that more people die from over-eating than from over-drinking. The transgressor in diet, moreover, is less efficient as a citizen, and at the present time we all need to be at our very best, mentally and physically. Yet I see little attempt in clubs and restaurants to economise in food. I recently estimated that the regulation supply of food at a prominent London club was about twice the quantity actually necessary, and a large proportion of the habitués gave evidence of the havoc which prolonged over-eating had wrought in their tissues. I lately heard a visitor to a country hotel remark to the landlord upon the abundance of the fare he provided. "Yes," was the proud rejoinder, "this is a house of plenty." At the fashionable West End restaurants food and drink are as lavishly consumed at the present time of crisis as in the piping times of peace. I think it possible that food is supplied too generously in some of our public institutions. At a large London workhouse which I visited some years ago it seemed to me that the supply of bread was more than was necessary, certainly in the case of some of the inmates.

I am convinced that the quantity of food required to maintain in health a person not engaged in strenuous muscular exercise is much less than is generally supposed. Young adults need more food than older people—our food requirements diminish with advancing years—yet it is surprising how small an amount of food even young people leading active lives can thrive on. Thus the diet of a young woman weighing 10½ st., the embodiment of healthy womanhood, whose daily routine is one long round of activity—bustling about the house, riding, driving, walking, &c., is somewhat as follows: Breakfast: A little bacon or fish, or an egg, with a couple of slices of bread-and-butter. Midday dinner: Equivalent to what a town-dweller would regard as a moderate lunch. Tea: A little bread-and-butter. Before going to bed: An apple or some other fruit. On this diet she keeps her weight, looks a picture of radiant health, never feels tired or unpleasantly hungry, and can always forego a meal without discomfort. The following is the diet of a London postman, aged 26, who walks about 15 miles in the day, and on some beats has to mount some 5000 steps daily (he carries a weight not exceeding 30 lb.): 5 A.M., a piece of toast and a cup of tea; 9 A.M., one rasher of bacon, four moderate slices of bread-and-butter, two cups of tea; 2 P.M., chop or cut off the joint, four potatoes, and green vegetables; 6 P.M., a bloater (or some other fish), four slices of bread-and-butter, one cup of tea. I could furnish many similar instances. Cases of this kind—and they are quite common—show how little food is needed in perfect health, even in the heyday of youth, and when a considerable amount of muscular work is being performed. They probably indicate the possession of a well-nigh ideal digestion. Others apparently healthy no doubt require a somewhat more generous diet.

The two chief factors which make for excessive eating are the appetising nature of the food and the softness of the vegetable (especially the farinaceous) portion of it. The object of the cook is to make her dishes as tasty as possible, and so to arrange their order that the appetite shall not flag throughout the meal. As to the second factor, it is obvious that soft farinaceous foods, such as porridge and milk puddings, which rapidly find their way into the stomach, are more likely to be taken in excess than firmer food, such as crusty bread, which calls for thorough mastication. The more completely farinaceous food is masticated the smaller is the quantity that will be needed to satisfy the appetite.

Another cause of excessive eating depends upon the principle that "appetite increases by what it feeds on." The more one accustomes oneself to eat largely the more clamant does the appetite become. Excessive eating, indeed, tends to beget an actual craving for food not unlike the morbid craving for stimulants. When the meal-time comes round, or even before, there is felt a sinking or other uncomfortable sensation at the pit of the stomach, or perhaps a feeling of lassitude. These feelings being relieved by food, it is erroneously concluded that they indicate the need for a restoking of the vital engine. That this view is entirely wrong is shown by the fact that many a healthy person, expending a good deal of muscular energy and consuming but a moderate quantity of food, can forego a meal without inconvenience. Even more significant is the fact that the habitual over-eater generally feels brighter and more vigorous after enforced abstinence, such as may be necessitated, e.g., by a bilious headache or an attack of gout. The machine is found to work better when the stoking ceases. The fact is, the unpleasant feelings referred to are not due to the lack of nutriment and do not indicate the need for more. The "sinking" results from the absence of the wanted mechanical stimulus afforded by a bulky meal; the lassitude is due to a poisoned state of the blood brought about by

[1] Nos. I. and II. were published in THE LANCET of March 25th (p. 685) and April 1st (p. 742) respectively.

chronic over-eating, and is removed temporarily by the absorption of the more diffusible, stimulating elements of the food. In this way the effects of the blood poisoning are for the time masked.

The over-eater, like the alcoholic inebriate, rarely realises that he is indulging in an injurious excess. In deciding whether too much food is being taken or not, the body weight affords useful help. If a person's weight is not above the normal the probability is that he is not eating too much, but if he is decidedly stout he very probably is over-eating. This test is not, indeed, infallible; we occasionally meet with thin people who eat abundantly and stout people who are moderate eaters. What is so frequently forgotten is the fact that the amount of food taken should be proportioned to the amount of muscular energy expended. If a person takes little exercise he requires proportionately less food, just as it requires less petrol to drive a car five miles than fifty. When a person who takes little exercise gets fat his fatness should not be put down to the lack of exercise, but rather to the fact that his supply of food is in excess of the amount of muscular energy expended. The London policeman probably consumes as much as the London postman, although he does not expend more than a quarter of the muscular energy expended by the latter. It is clear, therefore, that he eats more than is necessary—a conclusion which is not infrequently borne out by the amplitude of his proportions. It is as rare to meet a thin policeman past 30 in our towns as it is to see a stout postman anywhere. Stout people often resent the charge that they eat too much, and insist that they are very moderate eaters. Investigation generally shows otherwise, but whether they eat much or little the fact remains that in the vast majority of cases they eat more than they require.

All those who on reflection have reason to suspect that they may be eating superabundantly should, alike in their own and nation's interest, cautiously begin at once to cut down their rations. In this way they can improve their health, render themselves more efficient citizens, and save the wealth of their country. It is not suggested that a large reduction should be made suddenly. Rather should an attempt be made to accustom the body gradually to do with less and less food. To this end the food should be plain, not too appetising, and well masticated. Unfortunately, the British people are the most inefficient masticators in the world. I will now endeavour to explain how this bad habit has arisen, and to indicate some of the evils which result from it.

Mastication.—Efficient mastication among other advantages makes for economy in food, inasmuch as it promotes normal digestion and in this way reduces the amount of food needful to sustain the body. It is not generally known that it is essentially the vegetable portion of our food which demands mastication. The carnivora do not masticate their food, as anyone who has observed a dog bolt a piece of meat can testify; their teeth interlock and do not admit of any lateral grinding action. On the other hand, all the vegetable-feeding mammals are laborious masticators. This is because vegetable food consists of a cellulose framework more or less dense, which it is necessary to break up, so as to liberate the contained nutrient particles and allow them to come under the action of the digestive juices. That our ape-ancesters subjected their food to prolonged mastication is evident from a study of the teeth of their near relatives, the larger manlike apes (gorilla, chimpanzee, and ourang). I find that even the milk teeth of these animals are greatly worn down. Before man learnt to prepare his vegetable food artificially by maceration, grinding, and cooking, he had to subject most of it to a prolonged natural milling with his teeth. Our teeth have been to a great extent relieved of this laborious work by the miller and the cook. The saving of the work of mastication thus effected has certain manifest advantages, but these are largely discounted if the farinaceous food is rendered so soft that it is swallowed without being subjected to any but the merest pretence at mastication, for then not only is it not properly mixed with the saliva, but the teeth and salivary glands are cheated of their normal work. Now, unfortunately, in this country we consume all, or nearly all, our vegetable food in soft, pappy, pultaceous and spongy forms, with the result that we have come to be a nation of veritable food-suckers, with atrocious teeth, misshapen jaws, and none too good digestions. Our sole vegetable foods which invite mastication are crusty bread, dry toast, hard biscuits, salads, nuts, and apples. Our staple vegetable food, bread, is eaten in a spongy form. The loaves are shaped so as to give a minimum of surface for crust, and are lightly baked so that the crust shall be as thin as possible. In the "A. B. C." shops it is the custom when cutting the rectangular loaves into slices to put aside the end pieces, as the customers refuse to eat them. I am told by a Scotch baker that the most crusty loaves—those which rest on the floor and against the sides of the oven—fetch a lower price than the others, so rooted is the objection of the Scotch people to crusty bread.

Let us now consider the foods which form the bulk of our national vegetable diet. They are: soft spongy bread, bread-and-milk, cooked vegetables, puddings (suet, batter, "Yorkshire," plum, cabinet, milk, &c.), porridge, cakes (multitudinous), buns, scones, muffins, crumpets, tea-cakes, and fancy cakes galore. To set forth in detail the many evils which result from this pernicious system of diet would require several articles. The one I desire to emphasise just now is that it causes an excess of farinaceous food to be consumed. The more thoroughly a farinaceous food, such as bread, is chewed, the more intimately will it be mixed with the saliva, and the more efficiently is it likely to be digested; and it goes without saying that when food is well digested less of it will be required than when it is not. A piece of crusty bread, thoroughly masticated, will go a longer way to satisfy the appetite and the nutritive requirements of the system than an equivalent of pudding hastily swallowed.

The best way to secure adequate mastication is to choose foods which invite, or even compel, mastication. It is chiefly in regard to the cereal foods—wheaten flour, oatmeal, and rice—that reform is most needed. From the point of view of mastication oatmeal biscuits are preferable to oatmeal porridge, but the latter is so popular and valuable a food that it may be permitted with the proviso that it be subjected to some sort of chewing, and not allowed to flop like some huge poultice into the stomach. Wheaten flour—our staple vegetable food—should be employed for little else than bread, suet pudding (plain suet pudding, fruit pudding, meat pudding), plain biscuits, and home-made cake. Other puddings and the multitudinous varieties of cakes known to the pastry-cooks should be banned;

they have no special virtue and they can well be dispensed with. When a patient is knocked off his puddings or "sweets" by his doctor he often asks in a concerned or even injured tone what he can eat instead? The answer is that bread-and-butter (i.e., flour and fat) is as nutritious as any ordinary pudding and more wholesome than most. It is a good food because it is nutritive, simple, and (if the bread is crusty) compels mastication. It is, of course, chiefly in the form of bread that wheaten flour should be consumed. The loaves should be shaped so as to give a maximum surface for crust (spindle-shaped, or cylindrical-shaped) and well baked, so as to give a thick but not too hard or brittle crust. Unfortunately, many people are prevented by bad teeth from eating crusts.

Defective teeth.—Here I am led to say a few words about the deplorable condition of the teeth of our countrymen, the more so as the fact has recently been brought into prominent notice in connexion with our recruits. This state of things is a national disgrace. It is solely due to our faulty dietetic customs—above all to the practice of eating sweets and soft farinaceous food, which leaves the mouth in a chronic unhygienic condition. I estimate that there are among the inhabitants of these islands upwards of 200 millions of carious teeth, and probably an even greater number of socket abscesses (pyorrhœa alveolaris), while as to the jaws, it is rare to meet a normal one. One of the first things which strike the observant foreigner when he lands upon our shores is the large number of people with false teeth, and the great length and prominence of the natural teeth—a feature which the continental cartoonist has not been slow to accentuate. These obtrusively large teeth constitute a damning indictment against our habit of consuming nearly all our vegetable food in a form which does not put the teeth to adequate use. Teeth which are not put to vigorous use are not ground down as they should be, and they tend also to "grow out of their sockets," so that they, or rather the visible parts of them, become longer. This lengthening of the teeth is due in an even greater degree to pyorrhœa. Hence pap-fed people tend to be "long in the tooth."

We are happily beginning to awake to the necessity of looking after our children's teeth, and dental surgeons have been appointed to tend the teeth of the elementary-school children. This is a move in the right direction, but it is little more than shutting the stable-door after the horse has bolted. Dentists are mainly engaged in an endeavour to repair damaged teeth. Obviously our aim should be to prevent the damage, and this, as Dr. Sim Wallace has shown, can be done by choosing foods which exercise the teeth and salivary glands adequately, and by so arranging the order of them in a meal that the mouth shall be left in a sanitary condition.

So accustomed are we to the prevalence of dental disease in this country that we accept it as a matter of course. It is, however, a serious national evil, but happily one which can be remedied. The present time, when for reason of economy we are called upon to examine into and revise our dietetic habits, is a good one to put up a bold fight against it.

Wimpole-street, W.

A DEVONSHIRE CENTENARIAN.—Miss Emily Bond, daughter of the late Admiral Bond, who celebrated the hundredth anniversary of her birthday last June, died at Exeter last week.

THE CULTURE OF MEDICINAL HERBS.

THE letter of a correspondent in our last issue (p. 749) suggests the importance of growing wintergreen and willow within the British empire to assure a supply of salicin. The culture of medicinal herbs in general is a question well worthy of consideration at the present moment.

There was a time when no village garden was complete without its bed of simples from which the medicine-chest was regularly replenished, and although with the coming of the age of machinery the practice largely lapsed in this country, it still persists unchanged in the country of our nearest neighbour and ally, now much more largely agricultural than these islands. Here during the summer and autumn months family groups may constantly be seen sitting in their courts and doorways preparing the leaves and flowers which are to form the basis of the "*tisanes*," the famous domestic remedies for all minor ills. There are, of course, a number of herb-farms in Great Britain where cultivation of certain herbs is carried out and where others have been definitely abandoned as unprofitable—e.g., in the case of dandelion root, in which the cost of cultivation is greatly more than that of digging the weed. The practice may have a kind of popular revival in this country in view of the shortage of vegetable drugs of all kinds caused by the closing of the frontiers of the Central European States with their vast tracts of land and multitudes of rural population willing to collect leaves and roots. The revival is being promoted by the Herb-Growing Association[1] which is affiliated to the Women's Farm and Garden Union, who have undertaken to give advice to their members on herb-growing and the preparation and disposal of herbs, so that the market may not be overstocked with some and be short of others. It is pointed out that since the dealers buy in hundredweights, the small grower who has only a few pounds for the market would have difficulty in disposing of her crops except for some such coöperative system as is provided by the Association.

The difficulties to be faced are not small and must be carefully studied if there is to be any prospect of success. Many herbs are very slow growing, and it is long before the medicinal property is developed. The lack of belladonna extract is largely due to the fact that the culture of the Atropa belladonna requires much ground, and that the roots are not available to lift and dry on a profitable scale until the third year. Then not every soil or situation is suitable to develop the production of the useful drug in the herb. It is well known that the opium poppy, even if it grows freely in this climate, does not yield any considerable proportion of the morphine alkaloids. It is not accidental enterprise which has located the fields of peppermint and lavender at Mitcham and Hitchin; there are certain properties in the soil and local climate which bring about a maximum yield of the essential oil in the growing Mentha piperita and Lavandula vera. Experience, too, has shown that the growing of drugs cannot successfully be undertaken for any period of years except as part of a general farm. Land very soon gets "sick" of these herbs, and the crop no longer pays for the growing. Particularly is this so with belladonna and henbane.

Collection of wild herbs, on the other hand, is simpler and offers a useful field. The collector turns his attention from one to another herb, according to the season and the larger or smaller demand. No large outlay of capital is necessary, nor any waiting for a return on the labour and money expended. But the collection of wild-flower products too has its special difficulties. The autumn crocus, more correctly colchicum, is widely scattered over the flat river-meadows in many parts of this country, and the bulbs are betrayed by the large lily-like leaves which appear in the early spring. But the bulbs lie deep, and unless closely set, as they often are in a Swiss meadow, they will require an immensity of labour and a great destruction of the surface of a meadow before any considerable quantity has been grubbed up, although we have heard of an active man who was able to earn 27*s.* a week by so doing. In the second place, the question of drying is a crucial one. In most countries where leaves and flowers are gathered they can be

[1] The secretaries of the Herbal Subcommittee of the Women's Farm and Garden Union are Miss E. L. Chamberlain, F.R.H.S., and Miss Alice Sandford, to whom communications should be addressed at 45, Queen Anne's Chambers, S.W.

left to dry in the sun or under cover in the open air and retain all their essential ingredients unimpaired. Visitors to any sub-alpine or alpine meadow in the spring or summer will have noticed how each leaf and flower retains most of its form and colour in the process of drying to hay. Up and down this country we have abundance of foxglove leaves to prepare all the tincture and infusion that we use, but unless special facilities are provided for drying them or unusual meteorological conditions prevail the leaves will become mouldy or their contained glucosides be washed out or ferment before they reach the factory where the extraction is to take place.

The Women's Herb-Growing Association has therefore embarked on an enterprise which will require both expert knowledge and much careful organisation to make it a success. And we should say that success is much more likely to attend the collection of wild herbs than their cultivation. If cultivation is undertaken we have seen that two years or more may elapse before a crop can be obtained. Then if the supply exceeds the demand this crop when obtained will be unsaleable, as the manufacturers will naturally only buy sufficient to last from season to season, avoiding an accumulation of old and deteriorated herbs. Again, the absence of supplies from Central Europe has not only greatly raised prices but has also stimulated the organised collection of wild herbs in other parts of Europe—for example, in Switzerland, Spain, and Northern Italy, whence the supply may very soon again exceed the demand. India is offering considerable quantities of drugs, such as belladonna, of which the alkaloidal content has been found satisfactory. In normal times Belgium is our chief source of valerian and camomile, and doubtless will become so again.

In Australia the question is being seriously considered by the Commonwealth authorities, and it is stated in *Science Progress* that a board has been appointed to inquire into the whole matter, and, if possible, to establish the cultivation of medicinal plants on practical commercial lines. At first it is proposed to import seeds and plants and allocate them to the high schools to be tested in the school gardens. The produce will be tested at the laboratory of the Department of Agriculture, by which means it is hoped to obtain the necessary data to allocate the various plants to the districts best suited to them. Similar help might well be provided in this country to the industry of growing medicinal herbs.

THE SERVICES.

ARMY MEDICAL SERVICE.

Lieutenant-Colonel G. St. C. Thom, R.A.M.C., to be a Deputy Assistant Director-General, vice Lieutenant-Colonel W. R. Blackwell.

ROYAL ARMY MEDICAL CORPS.

The undermentioned are granted temporary rank whilst employed at the County of Middlesex War Hospital:—Temporary Major L. W. Rolleston, from the Napsbury War Hospital, to be Lieutenant-Colonel. Temporary Captain A. O'Neill, from the Napsbury War Hospital, and L. S. T. Burrell to be Majors. H. F. B. Roberts and H. C. Halsted to be Captains.

W. D. Anderson to be temporary Major.

The undermentioned to be temporary Honorary Majors:—W. I. de C. Wheeler and Temporary Honorary Lieutenant L. J. Austin, whilst employed with No. 2 British Red Cross Hospital, and Temporary Honorary Captain S. W. Patterson, whilst serving with the Australian Voluntary Hospital.

Temporary Captain A. S. Fry relinquishes his commission on appointment to the Indian Medical Service. Temporary Captain C. H. Mills relinquishes his commission.

The undermentioned to be temporary Captains:—A. S. Garden, G. J. Arnold, late Captain, R.A.M.C. (T.F.), and Staff-Surgeon G. H. Ross, Retired List, R.N.

The undermentioned temporary Lieutenants to be temporary Captains: G. M. De Vine, D. E. Derry, E. L. Mansel, T. E. Hammond, J. Marmion, C. W. Donald, F. G. Milne, T. F. Griffin, D. Bird, G. N. Lorimer, W. J. Lascelles, A. G. MacLeod, E. A. O. Travers, P. Carney, W. Thomas, J. H. Askins, H. H. Elliot, J. Sullivan, H. L. C. Noel, G. S. Phillips, M. E. Robinson, H. N. M. Puckle, R. M. Clarke, A. T. Roberts, G. D. K. Waldron, J. I. M. Jamieson, W. E. Giblin, W. A. Edwards, L. J. J. Nye, F. E. Keane, O. H. Edwards, F. Irvine, W. Smithies, H. H. Davis, C. E. Sundell, J. R. Slack, T. Sheehan, A. Wiley, F. S. Hawks, J. A. Hutchinson, F. H. Rudge, N. G. Horner, D. C. Taylor, W. W. Turner, W. M. O'Connor, H. B. Binks, A. H. Davidson, A. C. Freeth, M. L. Neylon, N. W. Steinberg, J. Hutchison, G. Riddoch, V. J. McAllister, W. W. Thomson, A. T. Paterson, A. C. A. Jekyll, C. K. Cohen, E. P. Dark, R. V. Steele, S. E. Elphick, E. J. Eedle, R. B. Hunt, C. Stuart, M. A. Farr, H. Mathewson, J. W. Wood, J. S. Caldwell, W. Morrison, R. H. Scovell, and O. H. Bowen.

E. C. Austin to be temporary Honorary Captain whilst employed at the Withington War Hospital, Manchester.

Temporary Captain S. P. Bedson, from a Service Battalion, The Northumberland Fusiliers, to be temporary Lieutenant.

The undermentioned to be temporary Lieutenants: E. C. Lindsey, J. Hewat, F. L. Gill, H. S. Gaskell, D. Morrison, P. J. Maguire, T. R. Hunter, E. J. Dermott, D. C. Suttie, G. F. Forde, W. J. McIvor, R. J. P. Waugh, W. Halliwell, B. P. Allison, T. W. Mason, G. J. Knaggs, R. W. Chapman, A. Walker, W. J. Evans, J. A. H. Telfer, F. J. H. Begg, Temporary Honorary Lieutenant J. N. Deacon, T. Perrin, F. L. Keith, H. A. Macdonald, T. P. Hutchison, J. L. Power, H. Tipping, W. A. Shafto, A. Pimm, J. E. Harford, W. W. W. Watt, and P. Figdor.

The undermentioned Cadets, Edinburgh University Contingent, Officers Training Corps, to be Lieutenants (on probation):—Lance-Corporal W. H. Ferguson, Lance-Corporal H. D. Wright, and K. P. Brown.

Canadian Army Medical Corps: Major C. P. Templeton to be temporary Lieutenant-Colonel. Lieutenants to be temporary Lieutenants: D. E. H. Cleveland, J. B. Galligan, T. A. MacKenzie, F. H. Hurlburt, M. D. Baker, E. C. Smith, D. T. Evans, J. G. Lee, and G. A. Lamont. The undermentioned temporary Lieutenants relinquish their commissions on account of ill-health: C. G. Sherowitz and F. W. Lee.

SUPPLEMENTARY TO REGULAR UNITS OR CORPS.

Captain G. V. Stockdale to be temporary Major whilst commanding a Field Ambulance from Jan. 4th to Feb. 7th. Captain C. Lovell to be temporary Major whilst commanding a Field Ambulance.

TERRITORIAL FORCE.

Royal Army Medical Corps.

Scottish Horse Mounted Brigade Field Ambulance: Major H. Richardson to be temporary Lieutenant-Colonel whilst in command of a Field Ambulance.

Yorks Mounted Brigade Field Ambulance: Lieutenant C. G. Meade to be Captain.

West Lancs Field Ambulance: Captain (temporary Major) A. P. H. Simpson relinquishes his temporary rank on alteration in posting.

Lowland Field Ambulance: Captain W. W. Greer to be temporary Major whilst in command of a Field Ambulance. Lieutenant W. Combe to be Captain.

Northumbrian Field Ambulance: Lieutenants John A. L. Magee and J. B. Sinson to be Captains.

West Lancs Casualty Clearing Station: Captain A. P. H. Simpson, from West Lancs Field Ambulance, to be Captain.

Welsh Border Mounted Brigade Field Ambulance: H. A. Higginson to be Lieutenant.

London Field Ambulance: Major W. G. Macfee, from Attached to Units other than Medical Units, to be Major.

Home Counties Casualty Clearing Station: Captain R. W. Brimacombe to be temporary Major whilst in command of a Casualty Clearing Station. Temporary Honorary Lieutenant W. Burt, from the Red Cross Hospital, Netley, to be Lieutenant.

Highland Casualty Clearing Station: F. G. Stuart to be Lieutenant.

South Midland Mounted Brigade Field Ambulance: Lieutenant W. G. Rutherford to be Captain.

East Anglia Field Ambulance: Lieutenant S. D. Graham to be Captain. Lieutenant R. J. R. Mecredy, from East Anglia Field Ambulance, to be Lieutenant.

North Midland Field Ambulance: Lieutenant T. E. A. Carr and Lieutenant (temporary Captain) G. Holmes to be Captains.

Attached to Units other than Medical Units.—Captain W. R. E. Williams to be Major. Captain H. F. Everett to be temporary Major whilst in command of a Field Ambulance. Captain J. J. Marsh relinquishes his commission on account of ill-health. Lieutenants E. H. Gonin and J. D. Jones to be Captains. G. H. Gill to be Lieutenant.

JOURNAL OF THE ROYAL ARMY MEDICAL CORPS.

The opening paper in the March issue of the *Journal of the Royal Army Medical Corps* is a record of observations which have been carried out at St. Bartholomew's Hospital for the Medical Research Committee by R. L. Mackenzie Wallis, demonstrator of chemical pathology, on acute nephritis, the so-called "trench nephritis." The cases referred to in the paper were mainly under the care of Captain W. Langdon Brown, who published a preliminary note on 58 cases in the July issue of the journal. A Report on Cases of Albuminuria amongst British Troops in France, by Major B. W. Hogarth; the Bacteria of Gangrenous Wounds, by Major H. R. Dean and Captain T. B. Mouat; Plates for Masking Facial Wounds, by Captain Richard Cruise, Captain Somerville Hastings, and Sergeant Derwent Wood (A.R.A.); and Field Sanitation, by Captain E. Brooke Pike, are the titles of other interesting communications. Dr. A. T. MacConkey, of the

Lister Institute, Elstree, Herts, puts forward a plea for a collective study of tetanus in which he says: "If all those who have wounded soldiers under their care will combine to study the disease and each give their help towards deciding upon the value of (1) the various premonitory symptoms; (2) the intraspinal method of administration; and (3) large doses of antitoxin, it is quite possible that we may make good progress in the direction of solving the problem of the successful treatment of tetanus."

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

In the 96 English and Welsh towns with populations exceeding 50,000 persons at the last Census, 8333 births and 5877 deaths were registered during the week ended Saturday, April 1st. The annual rate of mortality in these towns, which had been 17·2, 17·9, and 16·4 per 1000 in the three preceding weeks, rose in the week under notice to 16·9 per 1000 of their aggregate population, estimated at 18,136,180 persons at the middle of the year 1914. During the 13 weeks of the quarter just ended the mean annual death-rate in these towns averaged 15·7, against a corresponding rate of 15·3 per 1000 in London. The death-rate last week ranged from 7·5 in Southend-on-Sea, 8·0 in Ilford, 8·1 in Edmonton, 9·4 in Enfield, and 9·7 in Barnsley, to 23·4 in Aberdare, 24·0 in Southport, 25·1 in Liverpool and in West Hartlepool, 27·6 in Sunderland, and 29·3 in Rochdale.

The 5877 deaths were 155 in excess of the number in the previous week, and included 420 which were referred to the principal epidemic diseases, against numbers increasing from 345 to 391 in the three preceding weeks. Of these 420 deaths, 134 resulted from whooping-cough, 122 from measles, 71 from diphtheria, 66 from infantile diarrhœal diseases, 20 from scarlet fever, and 7 from enteric fever, but not one from small-pox. The death-rate from these diseases was equal to 1·2, against 1·1 per 1000 in each of the two preceding weeks. The deaths attributed to whooping-cough, which had been 85, 93, and 137 in the three preceding weeks, fell to 134, and included 37 in London, 15 in Manchester, 9 in Liverpool, 8 in Birmingham, 6 each in Derby and Sheffield, and 5 each in West Ham and Leyton. The deaths referred to measles, which had been 121, 127, and 115 in the three preceding weeks, rose to 122, and caused the highest annual death-rates of 1·8 in Leicester, 2·6 in Swansea, 2·7 in Great Yarmouth, 3·3 in Stockport, and 5·5 in Rochdale. The fatal cases of diphtheria, which had been 54, 61, and 53 in the three preceding weeks, rose to 71, of which 17 were registered in London, 6 in Birmingham, 4 each in West Ham and Liverpool, and 3 each in Stoke-on-Trent and Wolverhampton. The deaths of infants (under 2 years) from diarrhœa and enteritis, which had been 60, 68, and 65, in the three preceding weeks, numbered 66 and included 14 in London, 10 in Birmingham, 5 each in Liverpool and Sunderland, and 4 in Manchester. The deaths referred to scarlet fever, which had been 13, 19, and 12 in the three preceding weeks, rose to 20, of which 7 were recorded in London and 2 in Preston. The 7 fatal cases of enteric fever were 2 below the average in the earlier weeks of the quarter, and included 2 in Manchester.

The number of scarlet fever patients under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, which had steadily declined from 2257 to 1783 in the ten preceding weeks, further fell to 1768 on Saturday last; 214 new cases were admitted during the week, against 216, 193, and 210 in the three preceding weeks. These hospitals also contained on Saturday last 1427 cases of diphtheria, 242 of whooping-cough, 132 of measles, and 47 of enteric fever, but not one of small-pox. The 1465 deaths from all causes in London were 31 in excess of the number in the previous week, and corresponded to an annual death-rate of 16·9 per 1000. The deaths referred to diseases of the respiratory system, which had been 344, 405, and 337 in the three preceding weeks, further fell to 328, and were 147 below the number registered in the corresponding week of last year.

Of the 5877 deaths from all causes in the 96 towns, 191 resulted from violence and 444 were the subject of coroners' inquests, while 1783 occurred in public institutions. The causes of 59, or 1·0 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest. All the causes of death were duly certified in Leeds, Bristol, West Ham, Bradford, Hull, Newcastle-on-Tyne, and in 67 other smaller towns. Of the 59 uncertified causes, 18 were registered in Liverpool, 6 each in Birmingham and Manchester, 4 in Preston, and 3 in West Bromwich.

HEALTH OF SCOTCH TOWNS.

In the 16 largest Scotch towns with an aggregate population estimated at 2,364,500 persons at the middle of this year, 1148 births and 903 deaths were registered during the week ended Saturday, March 25th. The annual rate of mortality in these towns, which had increased from 15·5 to 20·7 per 1000 in the five preceding weeks, fell to 19·9 per 1000 in the week under notice. During the first 12 weeks of the quarter just ended the mean annual death-rate in these towns averaged 16·4 or 0·8 per 1000 above that recorded in the large English towns. The death-rate during the week ranged from 13·3 in Leith, 14·5 in Aberdeen and 15·8 in Perth, to 23·8 in Paisley, 26·8 in Greenock, and 28·0 in Kilmarnock.

The 903 deaths from all causes were 35 fewer than the number in the previous week, and included 82 which were referred to the principal epidemic diseases, against numbers rising from 56 to 89 in the three preceding weeks. Of these 82 deaths, 43 resulted from measles, 15 from diphtheria, 12 from infantile diarrhœal diseases, 8 from scarlet fever, 3 from whooping-cough, and 1 from enteric fever, but not one from small-pox. The annual death-rate from these diseases was equal to 1·8, or 0·7 per 1000 higher than that recorded in the large English towns. The deaths attributed to measles, which had been 23, 31, and 42 in the three preceding weeks, were 43, and included 21 in Glasgow and 5 each in Greenock, Coatbridge, and Kilmarnock. The deaths referred to diphtheria, which had been 10, 7, and 16 in the three preceding weeks, numbered 15, of which 5 were registered in Edinburgh, 4 in Glasgow, and 2 in Paisley. The fatal cases of diarrhœa and enteritis (among infants under 2 years), which had been 8, 8, and 11 in the three preceding weeks, were 12 in the week under notice, and included 4 in Glasgow, 3 in Dundee, and 2 in Clydebank. The deaths attributed to scarlet fever, which had been 9, 6, and 12 in the three preceding weeks, fell to 8, and comprised 6 in Glasgow and 2 in Paisley. The deaths from whooping-cough were slightly below the average in the earlier weeks of the quarter, and were recorded in Glasgow, Leith, and Kirkcaldy. The fatal case of enteric fever occurred in Glasgow.

The deaths referred to diseases of the respiratory system, which had increased from 88 to 195 in the five preceding weeks, further rose to 212 in the week under notice, and were 26 above the number registered in the corresponding week of last year. The deaths from violence numbered 29, against 29 and 26 in the two preceding weeks.

HEALTH OF IRISH TOWNS.

In the 19 town districts of Ireland with populations exceeding 10,000 persons at the last Census, 561 births and 535 deaths were registered during the week ended Saturday, March 25th. The annual rate of mortality in these towns, which had been 21·5, 24·5, and 21·3 per 1000 in the three preceding weeks, rose in the week under notice to 24·3 per 1000 of their aggregate population, estimated at 1,148,468 persons at the middle of last year. During the first 12 weeks of the quarter just ended the mean annual death-rate in these towns averaged 20·1, against corresponding rates of 15·6 and 16·4 per 1000 in the English and Scotch towns respectively. The death-rate during the week was equal to 28·2 in Dublin (against 16·6 in London and 21·1 in Glasgow), 21·3 in Belfast, 28·6 in Cork, 19·0 in Londonderry, 16·2 in Limerick, and 26·6 in Waterford, while in the 13 smaller towns the mean rate was 22·5 per 1000.

The 535 deaths from all causes were 65 in excess of the number in the previous week, and included 45 which were referred to the principal epidemic diseases, against 51 and 38 in the two preceding weeks. Of these 45 deaths, 18 resulted from measles, 15 from whooping-cough, 5 each from infantile diarrhœal diseases and enteric fever, and 2 from diphtheria, but not one from small-pox or scarlet fever. The annual death-rate from these diseases was equal to 2·0, against corresponding rates of 1·1 and 1·8 per 1000 in the English and Scotch towns respectively. The deaths attributed to measles, which had been 12, 18, and 16 in the three preceding weeks, rose to 18, and comprised 15 in Belfast, 2 in Dublin, and 1 in Cork. The deaths referred to whooping-cough, which had been 11, 10, and 8 in the three preceding weeks, rose to 15, and included 8 in Dublin and 4 in Belfast. The fatal cases of diarrhœa and enteritis (among infants under 2 years), which had been 12, 13, and 10 in the three preceding weeks, fell to 5, of which 3 were registered in Belfast and 2 in Dublin. The 5 deaths attributed to enteric fever, comprising 4 in Dublin and 1 in Portadown, were 4 in excess of the average in the earlier weeks of the quarter. The deaths from diphtheria were recorded in Belfast and Cork.

The deaths referred to diseases of the respiratory system, which had been 95, 124, and 117 in the three preceding weeks, rose to 134 in the week under notice, but were 9 below the number registered in the corresponding week of last year. Of the 535 deaths from all causes, 172, or 32 per cent., occurred in public institutions, and 6 resulted from violence. The causes of 24, or 4·5 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest, and included 10 in Dublin, 6 in Belfast, 4 in Cork, and 3 in Wexford; in the large English towns the proportion of uncertified causes did not exceed 0·7 per cent.

Correspondence.

"Audi alteram partem."

THE DURATION OF LIFE AFTER INGUINAL COLOTOMY.

To the Editor of THE LANCET.

SIR,—An old and valued friend of mine, a well-known local solicitor, with a long record of public service, died on Feb. 18th after a comparatively short illness, at the advanced age of 84 years. I saw him in consultation with the late Dr. Samuel Fenwick and his usual medical adviser on May 23rd, 1899. He then had intestinal obstruction with severe abdominal pain, and a well-defined mass was detected in the left iliac region, but nothing was discovered in the rectum within reach of the finger. He was advised to submit to operation without delay. Two days later (May 25th, 1899) Sir Frederick Treves performed inguinal colotomy. The growth, which was circumscribed, irregular in outline, and seemed to involve the whole circumference of the gut, was situated at the highest part of the rectum close to the sigmoid flexure. The opening into the descending colon was therefore made at a higher level than usual in such cases. He made a good and rapid recovery, soon returned to his duties, and continued to work up to a few days of his death. Not many weeks ago he went to London to transact business. On more than one occasion he told me he had acquired wonderful control over his artificial anus. Under ordinary conditions he usually knew when to expect an action of the bowels, and he was seldom disturbed again the same day. The best testimony I can produce of the success of the operation is contained in a letter which has just reached me from his widow, to whom I wrote asking permission to publish this note. She writes: "Since then, he has not suffered pain—nothing more than discomfort and inconvenience, borne so patiently, and, as you know, his vigour and activity returned to him surprisingly. Probably his great energy prolonged his life and prevented him sinking into the condition of a confirmed invalid." Such a record is, I believe, unique, and must be taken into consideration in any prognosis of the duration of life after inguinal colotomy. Let me add, in conclusion, that no doubt existed in the mind of anyone present at the operation of the significance of the growth. I am, Sir, yours faithfully,

FREDERICK S. PALMER, M.D., F.R.C.P.

Wimpole-street, W., April 3rd, 1916.

THE SIGNIFICANCE OF CERVICAL CAPILLARY MARKINGS.

To the Editor of THE LANCET.

SIR,—Dr. R. Crawshaw Holt having directed my attention to the possible connexion of certain cutaneous telangiectases with pulmonary tuberculosis, I was interested when examining healthy young adult women and girls of 15 years of age to see if these markings were present. In the large majority of cases they were absent, and where I found them, with very few exceptions, I found also either signs of arrested tuberculous disease or a history more or less definite of bronchitis or pneumonia in early life. This merely points to the advisability, where such markings are present, of pursuing investigations further to see if other signs of tuberculous trouble, active or latent, may be present.

I am, Sir, yours faithfully,

Manchester, March 28th, 1916. CATHERINE CHISHOLM.

To the Editor of THE LANCET.

SIR,—In THE LANCET of March 4th Dr. R. Crawshaw Holt recorded under this heading his belief in the diagnostic importance of these venules, when occurring about the cervico-dorsal region of the spine, in suspected tuberculosis inside the chest when other evidence is equivocal. This provoked a statement from Dr. F. Parkes Weber that many healthy young subjects showed these appearances here and elsewhere, and Dr. Clive Riviere followed with an interesting account of some of his own observations made upon school children.

From a prolonged study of venous appearances on the skin of children of all ages, of which I have detailed records of about 250, I am inclined to discredit the view that this particular type of phenomenon has any connexion with pressure on the deep systems of veins, or with local vaso-motor disturbances due to visceral disease. The finer capillary markings found in this situation are exactly similar in size and aspect with those often to be seen on other parts. My observations tend rather to suggest that local mechanical conditions help to determine their appearance—e.g., the pressure and friction of clothing over prominent or relatively unyielding parts, or the long-continued chafing of two skin-surfaces together. Constitutional peculiarities of the skin also probably play a part. The sites of election are over the sternum, the region of the clavicles, the spinous processes of the vertebræ, and the inguinal regions, though they may, of course, occur elsewhere. They are also very persistent. Thus, in one of my cases, at the age of 5 years, a considerable number were present about the skin of the thorax, including the spinal region in question. Six years later there were still many to be found, those over the vertebræ being still visible. This child is robust, and has never shown any symptom or physical sign of tracheo-bronchial adenopathy or phthisis.

There are several other, and I think cogent, reasons for disputing the view put forward by Dr. Crawshaw Holt, but to enter into these would unduly prolong this letter.

I am, Sir, yours faithfully,

Liverpool, April 3rd, 1916. EDMUND HUGHES.

CERTIFICATION OF THE CAUSE OF DEATH.

To the Editor of THE LANCET.

SIR,—I quite agree with the remarks of Dr. R. R. Rentoul in your issue of March 25th. I have advocated the careful examination of the body by the medical man who has attended the patient before giving a certificate as to the cause of death, at the same time verifying death by certain tests which I have drawn up for that purpose and published. Our society drew up certain tests of death, and promoted a Bill to amend the law relating to Registration of Deaths and to Burials, presented by Mr. George Greenwood, and supported by Mr. Atherley Jones, Mr. Rowlands, and ordered by the House of Commons to be printed June 27th, 1912.

I am, Sir, yours faithfully,

J. BRINDLEY-JAMES,

Examiner-in-Chief, London Association for the Prevention of Premature Burial.

Barnes, March 30th, 1916.

PSYCHO-ANALYSIS.

To the Editor of THE LANCET.

SIR,—In a letter in THE LANCET of March 11th Dr. Ernest Jones says:—

I venture to add, without much fear of contradiction, that the statements made by more than one of your recent contributors, to the effect that they have seen many patients who have been harmed by psycho-analysis, do not refer to the patients of those who are psycho-analysts in the only legitimate sense of the word—i.e., those who have been competently trained in the subject.

This does not appear to me to be a scientific attitude of mind. Every benefit to mankind has a reverse side of possible evil, and although these chances of evil may be considerably lessened by experts in any method, a certain amount of harm is sure to accrue to a certain number of patients with regard to psycho-analysis, and it is surely a safer and more enlightened attitude to recognise the possibilities of evil and to keep on the alert to battle with the evils than to lull oneself into a false security by asserting that they do not exist. As a rule, the greater the beneficial possibilities of anything, the greater in proportion are its deleterious possibilities.

I am, Sir, yours faithfully,

Tonbridge, Kent, March 31st, 1916. C. F. STREETEN.

CHILDREN'S FRESH-AIR MISSION.—The annual meeting of the friends of the Mission will be held in Staple Inn Hall, Holborn, by the permission of the Institute of Actuaries, on Wednesday next, April 12th, at 4 P.M. Alderman Sir William H. Dunn will preside, and the following are expected to attend and speak in support of the Fund: Mrs. Scharlieb, M.D., Miss Fairbank, Mr. Ernest E. Wild, K.C., and Mr. W. Pett Ridge.

The War.

THE CASUALTY LIST.

THE following names of medical officers appear among the casualties announced since our last issue:—

Died.

Major F. C. Lambert, R.A.M.C., received his medical education at St. Mary's Hospital, London, qualifying in 1902, and joined the R.A.M.C. in 1904. He has been twice mentioned in despatches.

Captain J. T. Leon, R.A.M.C. (T.F.), was a student at St. Mary's Hospital, London, qualifying in 1895, and was in practice at Southsea prior to the war.

Wounded.

Captain M. Gross, R.A.M.C.
Captain A. Robb, R.A.M.C.

DEATHS AMONG THE SONS OF MEDICAL MEN.

The following sons of medical men must be added to our lists of those who have fallen during the war:—

Lieutenant V. C. Bruce, Gordon Highlanders, second surviving son of the late Dr. A. Bruce, of Ainslie-place, Edinburgh.

Sergeant A. R. Carter, Rhodesian Regiment, elder son of the late Deputy Surgeon-General R. W. Carter.

THE HONOURS LIST.

The *Military Cross* has been conferred upon the following medical officers in recognition of their gallantry and devotion to duty in the field:—

Captain Bernard Grellier, R.A.M.C. (attached to 10th Battalion, Royal Welsh Fusiliers).

For conspicuous gallantry and devotion to duty during operations when tending the wounded under heavy shell fire. He helped to dig out wounded men who were buried.

Temporary Captain Leonard Douglas Saunders, R.A.M.C. (attached to 10th Battalion Notts and Derby Regiment)

For conspicuous gallantry and devotion to duty. He tended the wounded under heavy fire, and finally evacuated them all with great skill and care. His clothing was torn by fragments of shell, and he was at work for 48 hours without a rest. This is the third time he has displayed great coolness and devotion to duty.

Temporary Captain Harry Vere White, R.A.M.C. (attached to 7th Battalion Lincoln Regiment).

For conspicuous gallantry and devotion to duty during operations when tending the wounded. His dressing station was repeatedly hit by shells, and he himself was severely knocked about several times, but for 36 hours he stuck to his work.

Temporary Lieutenant Reginald Peter Nutcombe Brickland Bluett, R.A.M.C. (attached to 8th Battalion Durham Light Infantry (T.F.)).

For conspicuous gallantry. He tended the wounded under heavy shell fire, and was continuously at work for 20 hours. Through his exertions they were removed to a place of safety, although the aid post was unapproachable owing to the enemy's shell fire.

Temporary Lieutenant John Alexander Harper, 52nd Field Ambulance, R.A.M.C.

For conspicuous gallantry when leading stretcher-bearers during operations. On one occasion, when three of his bearers were wounded, he went alone, under heavy shell fire, to the aid post.

The name of Staff-Surgeon R. B. Scribner, R.N., is mentioned in a dispatch by Rear-Admiral Sir Dudley de Chair for good services in the patrol cruisers.

FOREIGN DECORATIONS.

The President of the French Republic has conferred the Legion of Honour upon the following medical officers in recognition of their distinguished service during the campaign:—

Grand Officer.—Surgeon-General Sir A. T. Sloggett, K.C.B., C.M.G., K.H.S. (substituted for the "Croix de Commandeur," the award of which was reported in THE LANCET of Nov. 13th, 1915).

Croix de Guerre.—Lieutenant-Colonel J. Mill, R.A.M.C (T.F.); Captain J. A. Cullum, Canadian A.M.C. (attached to 28th Canadian Infantry Battalion); Captain E. D. Gairdner, R.A M.C. (T.F.); Captain G. H. R. Gibson, Canadian A.M.C. (attached to Headquarters, 1st Canadian Division).

THE ENROLMENT OF MEDICAL MEN.

The following statement has been published by the War Office as to the need for medical officers in the military services: it may be read as an appeal for immediate enrolment.

In order to maintain the supply of medical officers required to meet the needs of the military services, it is urgently necessary in the interests of the civil community no less than of our armies that all qualified medical men not exceeding 45 years of age, irrespective of their circumstances, should without delay enter their names under the Enrolment Scheme which has been established by the Central Medical War Committee and has the authorisation of the War Office.

The work of enrolment is carried out by three representative bodies of the medical profession known as the Central Medical War Committee for England and Wales, the Scottish Medical Service Emergency Committee, and the Irish Medical War Committee. It should be understood that enrolment does not mean that the medical man is at once called up for service in the Royal Army Medical Corps; he may never be called up, and in any case will not be called up until the proper time has come for his services to be accepted. The real purpose of the scheme is to secure that those doctors are selected for military purposes who can best be spared at the particular date and from the particular place, with due regard to the needs of the civil population, to the personal circumstances of the doctor, and to the requirements of the armies.

To carry out efficiently the comparative process necessary for an equitable distribution of the burden as it affects the medical profession and the civil population, it is evident that all doctors of suitable age should have offered themselves for service, quite irrespective of their particular circumstances, whatever these may be, so that a proper selection may be made by a body equipped with the requisite information from all parts of the country, and thus competent to make the necessary comparisons. The only alternatives are haphazard recruitment and arbitrary demand.

It is for these reasons that the War Office has officially recognised and now relies upon the Central Medical War Committee and the corresponding committees in Scotland and Ireland. These committees include representatives of the Royal Colleges of Physicians and the Royal Colleges of Surgeons, of the universities and medical schools, and of the British Medical Association, and have associated with themselves in their work representatives of the Government departments mainly concerned. The committees have an organisation of representative local committees in all parts of the three countries, from which they obtain local information and advice, and they work in daily contact with the various Government departments concerned.

Furthermore, for the purpose of considering and advising, through the Central Committee, on cases in England and Wales, having such special features as exist, for instance, in regard to the staffs of the metropolitan hospitals, a Committee of Reference has, with the approval of the War Office, been now established by the Royal College of Physicians of London and the Royal College of Surgeons of England, acting jointly.

Thus it will be seen that, in order to secure the desired result, that is to say, to obtain the medical officers needed for the army month by month with the least possible interference with the needs of the civil population and the least possible injury to the individual practitioner, it is necessary that every medical man under the age of 45 who does not hold a certificate of enrolment (or of provisional acceptance by the War Office) should enrol at once. Only in this way can the exigencies of the situation be fairly and efficiently met.

VACANCIES FOR MEDICAL OFFICERS.—Three medical officers are urgently required to complete the establishment of the 2/1st Highland Mounted Brigade Field Ambulance. Also a regimental medical officer for the 2/2nd Lovat Scouts. Full particulars regarding pay and duties can be obtained from Major Mowat, Officer Commanding, 2/1st Highland Mounted Brigade Field Ambulance, 49, Northgate, Beccles, Suffolk.—Interesting work for medical officers in the 3/3rd Home Counties Field Ambulance, R.A.M.C. Only two or three vacancies exist, and medical men desirous of joining this unit should make immediate application to the officer commanding, at the headquarters, "Frenches," Redhill.

OBITUARY OF THE WAR.

ROBERT FRANCIS HEBBERT, M.R.C.S. ENG., L.R.C.P. LOND.,

CAPTAIN, INDIAN MEDICAL SERVICE.

Captain Robert Francis Hebbert, I.M.S., whose death was announced recently as having occurred in the Persian Gulf, joined St. Thomas's Hospital in 1900 as a student, having received his school education at Malvern. He combined work with play, as he took the first and second year college prizes, qualified for the Cheselden medal for surgery, and played Association football and tennis for the hospital. On obtaining his diplomas in 1906 he joined the Indian Medical Service. He will be sadly missed by all who knew and worked with him at the hospital. He had only recently married.



PERCY HAYCRAFT BERRY, M.R.C.S., L.R.C.P. LOND.,

LIEUTENANT, ROYAL ARMY MEDICAL CORPS.

Lieutenant P. Haycraft Berry, who met his death in trying to rescue a drowning man at Barrani, Egypt, on March 10th, was 27 years of age. He was educated at Malvern, and King's College, Cambridge, where he took an honours degree in 1910 and entered Guy's Hospital the same year, qualifying in 1913. Subsequently he held the appointments of clinical assistant and assistant house surgeon at his own hospital, but was forced by the urgent calls of a general practice to help his father and to forego further appointments which he could have held in the ordinary course of events. He joined the Royal Army Medical Corps in May, 1915, as soon as he could be spared from the press of winter work, and was attached successively to the Cambridge Hospital, Aldershot, the hospital ship *Assaye* (during the Dardanelles operations), and finally to the Berks Yeomanry. A friend writes: "A keen sportsman, he gained his oar in the May races of 1908, and was one of the winners of the Browning Pairs in 1910; also he was an excellent horseman. Always keen on matters military, he derived his enthusiasm for cavalry work whilst a member of the Cambridge University Officers Training Corps. In all games he was not only a good loser but an excellent winner. He never allowed an unfailing cheerful nature to dull an unusually perceptive brain, but rather let it be the means of overcoming obstacles which proved drudgery to others. To those who knew him intimately an appreciation of his character is unnecessary; to those who did not, nothing could be more eloquent of the man than the official telegram giving particulars of his death. 'At Barrani, seeing man drowning, plunged off rock into heavy surf with all clothes on to rescue. Immediately big wave broke over him and he disappeared. Body found five hours later with large wounds head, apparently ante-mortem. Buried March 11th at Barrani with military honours.'"



JOHN WILSON, M.B., CH.B. EDIN.,

LIEUTENANT, ROYAL ARMY MEDICAL CORPS.

Lieutenant John Wilson, who was killed in action on March 9th, aged 29 years, was born in Armadale, Linlithgowshire. He was educated at John Watson's College and Edinburgh University, where he graduated in 1909. A friend writes as follows concerning his death: "A message was received that several men lay wounded in a central trench. Lieutenant Wilson at once volunteered to go to their assistance, although it was necessary to cross absolutely open ground, swept by the fire of the hostile trenches. He reached the wounded men, bandaged up those who most required it, and was on his way back to shelter when he was fired upon by the Germans from their front-line trenches. A bullet struck him just above the heart and he died in a few minutes. His colonel says that Lieutenant Wilson by his energy and devotion to duty had earned the appreciation of every officer and man in the battalion, and only ten days before had the pleasure of recommending him for the Military Cross. To his professional colleagues and friends the news of Lieutenant Wilson's death brought grief and horror. He was beloved by all who knew him, and to his *clientèle* his loss is irreparable. Genial and obliging in disposition, intelligent and industrious in the prosecution of his work, transparently honest and straight in all his relationships with others, he was a man whom it was good to know."



CHARLES STRICKLAND, L.R.C.P. LOND., L.R.C.S. EDIN.,

FLEET-SURGEON, ROYAL NAVY (RETD.).

MANY naval surgeons and St. Bartholomew's men of the early "eighties" will hear with regret of the death of Charles Strickland, which occurred after nine months' illness borne cheerfully with great patience. He entered the medical profession in 1880, rather later than most of his contemporaries, as he had been obliged to live for some time in South Africa on account of pulmonary tuberculosis, the disease which recurred last year. Strickland had a happy disposition, thoroughly enjoyed his life, and his genial nature made him a social success both at the hospital and in the services. When the war broke out he was Fleet-Surgeon at the Royal Marine Light Infantry Barracks, Forton. Soon after this he was placed on the retired list on account of age, but he remained at this post until ill-health necessitated sanatorium treatment. He died somewhat suddenly on March 25th, at the age of 56. His funeral, a naval one, took place on March 31st at the Highland-road Cemetery, Southsea.

THE LATE MR. H. S. LYLE.—Henry S. Lyle, who had been senior honorary surgeon at the Liverpool Cancer and Skin Hospital for some 24 years, died at his residence, Upper Parliament-street, Liverpool, on March 29th. He qualified as a Member of the Royal College of Surgeons of England in 1880 and earned a well-deserved reputation as a dermatologist in Liverpool. He was civilian medical officer to the 9th King's (Liverpool Regiment).

THE CENTRAL MEDICAL WAR COMMITTEE.

A meeting of the Committee was held on Wednesday, April 5th, at which the most important business transacted was the approval by the Committee of the formation of a Compassionate Fund, to be used for the benefit of medical men joining the military services. The Committee decided to ask the Council of the British Medical Association to consider the desirability of instituting such a Fund. No evidence was placed before the Committee, in a Memorandum which had been approved by the Executive Subcommittee, that any special fund would be needed, but it appeared from many indications that it was advisable that some scheme for its formation should be put into readiness. The Memorandum pointed out rightly that the heaviest tax might be upon those who are relatively well off and least likely to mention their position. The losses of men in consulting practice, for example, owing to heavy commitments in the matter of rent, might be considerable, while their practices, being of a personal nature, would suffer during their absence.

The Committee considered the statement recently published by the War Office with regard to the enrolment of medical men, and several speakers dwelt upon the necessity of ascertaining with accuracy the number of medical men who are available for enrolment, as only in this way can it be gathered what proportion of medical men have enrolled and how far the burden is being fairly distributed under the scheme. It was generally recognised that the scheme could only be persevered with if the percentage of enrolment was high, 75 per cent. being the lowest figure mentioned. It was pointed out in the Committee that the Navy also needed medical officers and might need more. The statement concerning enrolment issued by the War Office must to some extent be read as indicating the needs of the Navy, a matter upon which the two services will come to some agreement. The following resolution was adopted:—

The Committee will not proceed to call up practitioners under the Enrolment Scheme unless and until 75 per cent. of those medical men in England and Wales, who on Jan. 5th, 1916, were of military age and not holding a commission, have enrolled, or have since that date received a commission in His Majesty's Forces or a letter of provisional acceptance. Military age for this purpose means under 45 years of age.

The official correspondence with regard to the formation of the Advisory Committee of the Royal College of Physicians of London and the Royal College of Surgeons of England was placed before the Committee. The names of the members of the Committee were published in THE LANCET last week. Mr. Frederick G. Hallett, the secretary of the English Conjoint Examination Board, is acting as secretary of the Committee, and formally announced that the body had been constituted, that its meetings would take place at the Royal College of Physicians of London, and that the office of the Committee would be at the Examination Hall, 8 to 11, Queen-square, Bloomsbury.

THE MILITARY HOSPITALS IN ALEXANDRIA.—A correspondent writes as follows: "Profiting by the opportunity offered by a few days' sojourn in Alexandria I have visited some of the military hospitals which have been established there during the past 12 months. There are four 'general' hospitals. No. 15 is in a large school in the centre of the town; No. 17 is at Victoria, a seaside residential suburb, also in college premises; No. 19 occupies the splendid Deaconess Hospital buildings and some adjacent schools; while No. 21 is housed in the Ras-el-Tin barracks, Alexandria, hard by the Sultan's palace. In addition to these, No. 5 Indian Hospital and the Bombay Presidency Hospital occupy the Casino at Ramleh. In many cases these premises, capacious and well-equipped though they were before the war, were inadequate for the demands put on them, and various adaptations have been carried out. Perhaps the most remarkable of these feats are those which have been necessitated by the equipment of theatres. It is impossible even for the hardened pessimist to avoid a lively sense of gratification in realising what our much-criticised doctors and soldiers are capable of doing in such an emergency as this. But it is not the theatres only that afford evidence of thoroughness and care in the carrying out of so difficult a task. The wards, the X ray rooms, and the sanitary arrangements all bear unmistakable marks of the same spirit of thoroughness. When extensions beyond the walls of the original premises have proved necessary marquees have been widely used as overflow wards. Where so much excellent work is being done it would be invidious to make special mention of individual officers, but as certain hospitals have undertaken particular tasks it is perhaps permissible to remark upon the splint factory at No. 21 General Hospital, the venereal wards at No. 17, and the important researches into dysentery at No. 19. At all the hospitals surgery of a very high order has been practised, the records of which, when collated and digested, will prove of material value in the future. The other day a foretaste of this was afforded by the discussion which the Alexandria Clinical Society held at No. 17 General Hospital on the treatment of head injuries. This will probably be reported fully. The discussion, which was opened and closed by Colonel Sir Victor Horsley, was listened to by over 100 officers. It is, perhaps, in the department of medicine, however, that these hospitals have done their finest work. The arrangements for dealing with large numbers of dysentery and enterica cases are everywhere admirable, and the results both in regard to recovery and spread of infection have been most gratifying. The re-discovery of the value of emetine in amœbic dysentery by Sir Leonard Rogers was made in the nick of time, and has saved scores of lives. No Briton who has visited these hospitals could fail to be proud of their equipment, organisation, and actual performances."

Medical News.

EXAMINING BOARD IN ENGLAND BY THE ROYAL COLLEGES OF PHYSICIANS OF LONDON AND SURGEONS OF ENGLAND.—At the First Professional Examination of the Conjoint Examining Board held on March 28th, 29th, 30th, and 31st, and April 1st and 3rd, the following candidates were approved in the undermentioned subjects:—

Chemistry and Physics.—Alexander Herbert Bean and Hugo Boger, University College; Walter Richard Baxter Booth, Manchester University; Percy Croad Brett, St. Mary's Hospital; John William Chadwick, Manchester University; George William Chester, King's College; John Joseph Coghlan, London Hospital; Redgewell George Dansie, King's College; Ralph Martin Ealand, Bristol University; Mohammed Nour Eldin, St. Bartholomew's Hospital; Riad Akhnookh Fancus, Manchester University; James Hassall France (special); Werner Göthe, Middlesex Hospital; Thomas Hodgson Jordan Hargreaves, Royal Albert Memorial College, Exeter; Albert Reby Jones, Liverpool University; Thomas Trefor Jones, Manchester University; Reginald Oladipo Lahanmi and Reginald Cyril Lightwood, King's College; John Andrew Mackay-Ross, St. Bartholomew's Hospital; Edgar Duncan MacMillan, South-Western Polytechnic; Hussein Nosrat, University College; Leslie Penhall Phillips, King's College; Henry Christoffers Powell, Charing Cross Hospital and King's College; Johannes Jacobus Redelinghuys, University College; Thomas Roger Rees, University College, Cardiff; Mary Jane Ripley, University College; Jacques Spira, Brussels University and King's College; Edward Howard Strange, University College, Cardiff; Harold John Vane Sutton, Middlesex Hospital; John Christopher Twomey, Liverpool University; John George Walker (special); Albert Charles Zwaris Wijayaratne, University College; Tudor Williams, University College, Cardiff; and Charles Florance Young, London Hospital.

Chemistry.—Mark Louis Barst, London Hospital; Henry Leigh Bowen, King Edward's School, Birmingham; Maxwell Hall, Guy's Hospital; Reginald Rowley Halsall and David Hoole, Manchester University; John Dougan Kelson, London Hospital; Daniell Maximos, King's College; Edgar Lewis Jones Reason, St. Mary's Hospital; Constance Elizabeth Marlar Ridout, University College; Herbert Leyland Sackett, St. Bartholomew's Hospital; Mohamed Sidky, Middlesex Hospital; Samuel Snelson, Manchester University; and John Oscar Morgan Wade, University College, Cardiff.

Physics.—Douglas Robert Ainsworth and Hitchon Seater Chadwick, Manchester University; Harold Spencer Davies, University College, Cardiff; Mohammed Abdel Kader El Hennawy, St. Mary's Hospital; Sydney Hazeldine, University College; Montague Henry Lichtenstein, Manchester University; John Frederick Charles McColl and Elizabeth Esther McCulloch, Liverpool University; Oswald Edgar John McOustra, University College; Madeline Phyllis Parker, London School of Medicine for Women; Benn Roland Reynolds; University College, Cardiff; Josef Sonenberg-Bergson, Breslau University and King's College; and Sidney Bertrand Winnick, London Hospital.

Elementary Biology.—Charles Spencer Anderson, St. Mary's Hospital; Henry Edwards Archer and Douglas Albert Raoul Aufranc, Middlesex Hospital; George Frederick Baxter, Westminster Hospital and King's College; Ivy Constance Beach, London School of Medicine for Women; Alexander Herbert Bean, University College; Margaret Gladys Best, London School of Medicine for Women; Israel Blain, Manchester University; Hugo Boger, University College; Harold Bridgewater Bramley, Liverpool University; Ernest Brazao, Middlesex Hospital; Percy Croad Brett, St. Mary's Hospital; Mary Burfield, London School of Medicine for Women; Kenneth Entwisle Bury, St. Thomas's Hospital; Edward Joseph Jean Buyck, King's College; Louis Ely Reginald Carroll, St. Bartholomew's Hospital; John William

Chadwick, Manchester University; George William Cheater, King's College; Marion Constance Vera Clarke, London School of Medicine for Women; Alice Maud Mary Clegg, Technical School, Liverpool; Dudley Hugh Cockell, St. Bartholomew's Hospital; John Joseph Coghlan, London Hospital; Gerald Cecil Wootton Curson, Guy's Hospital; Redgewell George Dansie, King's College; Harold Spencer Davies, University College, Cardiff; Thomas Draper and Henry Dryerre, Royal College, Edinburgh; Robert Douglas Flintan, St. Thomas's Hospital; Harold Bert Flooks, University College, Cardiff; William Francis Gawne, Technical School, Liverpool; Barnett Goldfoot, St. Bartholomew's Hospital; Werner Göthe, Middlesex Hospital; Maxwell Hall, Guy's Hospital; Henry John Henderson, South-Western Polytechnic; John Herbert, Guy's Hospital; David Hoole, Manchester University; Francis Joselin Jauch, Birkbeck College; Henry Jennings and Silas Glynne Jones, Technical School, Liverpool; Thomas Trefor Jones, Manchester University; Henry David Kelf, Birkbeck College; John Dougan Kelson and Henry Alfred Connor Kite, London Hospital; Agnes Knowles, London School of Medicine for Women; Francis Knoyle, Birkbeck College; George Valentine Chapman Last, Technical School, Liverpool; Montague Henry Lichtenstein, Manchester University; Reginald Cyril Lightwood, King's College; Henry Davies Llewellyn, University College, Cardiff; John Andrew Mackay-Ross, St. Bartholomew's Hospital; Colin Campbell Mackinnon, Middlesex Hospital; Oswald Edgar John McOustra, University College; Cyril Randell Martin, Birkbeck College; Albert Edward Mills, Bristol University; James Aird Morton, St. Bartholomew's Hospital; Daniel Joseph O'Meara, Guy's Hospital; Leslie Penhall Phillips, King's College; Henry Christoffers Powell, Charing Cross Hospital and King's College; Mary Colegrave Prideaux, London School of Medicine for Women; Thomas Roger Rees, and Benn Roland Reynolds, University College, Cardiff; Constance Elizabeth Marlar Ridout and Mary Jane Ripley, University College; William Sleeman Roberts, St. Mary's Hospital; Edith Marjorie Rooke and Margaret Charlotte Scrace, London School of Medicine for Women; Ronald Cunliffe Shaw and Samuel Snelson, Manchester University; Edward Howard Strange, University College, Cardiff; Harold John Vane Sutton, Middlesex Hospital; Joseph Gillison Tait, Edinburgh School of Medicine; Thomas Ben Thomas, St. Bartholomew's Hospital; Norman Victor Wadsworth, Guy's Hospital; William Walsham, St. Mary's Hospital; John Stanley White, St. Bartholomew's Hospital; and Catherine Mabel Williams and Greta Isabel Yeoman, London School of Medicine for Women.

UNIVERSITY OF LONDON.—At examinations for internal and external students, held recently, the following candidates were successful:—

SECOND EXAMINATION FOR MEDICAL DEGREES, PART I.

John Vernon Cannadine Braithwaite and William Mark Brown, Guy's Hospital; Michael Waldo Boone Bulman, London Hospital; Leslie Burvill-Holmes, Guy's Hospital; Ernest Edwin Carter, St. Thomas's Hospital (distinction); Francis Cavers, University College; Alix Jeanne Churchill, London (Royal Free Hospital) School of Medicine for Women; Harris Cohen, University College, Cardiff; Hyman Solomon Cohen, London Hospital; Morris Cohen, Guy's Hospital; Simeon Moses Cohen, University College, Cardiff; Florence Edith Coombes, London (Royal Free Hospital) School of Medicine for Women; Daryll Cedric Corry, University College; Carl Knight Cullen, London Hospital; Beryl Dyer, London (Royal Free Hospital) School of Medicine for Women; Edwin Spencer Etheridge, University College; James Fanning, London Hospital; James O'Farrell Fletcher, St. Mary's Hospital; Raymond Eustace Ford, University of Sheffield; Reginald Stafford Foss, St. Thomas's Hospital; Dennis Herbert Geffen, University College; Edward Emile Delisle Gray, Guy's Hospital; Robert Handley Greaves, University of Sheffield; Dorothy Margaret Greig, Hilda Treloggen Haggett, Edith May Hall, Joan Margaret Redford Harris, and Eleanor Harse, London (Royal Free Hospital) School of Medicine for Women; Henry Lewis Heimann, University College; Christopher Langton Hewer, St. Bartholomew's Hospital; Gilbert Rashleigh Hull, St. Thomas's Hospital; Graydon Hume and Reginald Cyril Bell Ledlie, Guy's Hospital; John Neil Leitch, St. Bartholomew's Hospital; Horace Sharman Le Marquand, St. Thomas's Hospital; Henri Toussaint Levieux, Guy's Hospital; Gdal-Leizer Levin, King's College; Hyman Jacob Levy, University College, Cardiff (distinction); William Ernest Lloyd, St. Bartholomew's Hospital; Syed Francis Mahmood, University College, Cardiff; Charles Dundas Maitland, St. Thomas's Hospital; Ida Caroline Mann, London (Royal Free Hospital) School of Medicine for Women; Maurice Marcus, London Hospital; Grant Massie, Guy's Hospital; Kathleen Harding Matthews and Anna Miller, London (Royal Free Hospital) School of Medicine for Women; Richard Maurice Hoyle Newbery, St. Mary's Hospital; Sybil Gertrude Overton, London (Royal Free Hospital) School of Medicine for Women; Jal Pestonji Padshah, University College; Wilfrid Walter Payne, Guy's Hospital; Reginald Ernest Pleasance, University of Sheffield; Rowan William Revell, University College; William Arthur Richards, University College, Cardiff; Owen William Roberts, King's College; Samuel Rosenschein and Charles Herbert St. John, Guy's Hospital; Ruth Mary Scutt, Olive Ballance Sharp, and Katherine Jane Shaw, London (Royal Free Hospital) School of Medicine for Women; Gerald Maurice Joseph Slot, St. Paul's School; Sonia Straschun, London (Royal Free Hospital) School of Medicine for Women; Muriel Amy Sutton, University College; Vanda Patten Thomas, Ruth Catherine Townshend, and Norah Edith Trouton, London (Royal Free Hospital) School of Medicine for Women; Noël Sydney Bailey Vinter, St. Bartholomew's Hospital; and Evelyn Cecil Whitehall-Cooke, St. Thomas's Hospital.

SECOND EXAMINATION FOR MEDICAL DEGREES, PART II.

Lena Cecilia Adam, London (Royal Free Hospital) School of Medicine for Women; *†‡Gerald Victor Wright Anderson, University College; Loveday Shackell Banes and Annie Hardy Banks, London (Royal Free Hospital) School of Medicine for Women; Monty Baranov, University College; Mary Rushton Barkas, London (Royal Free Hospital) School of Medicine for Women; Anthony Blackstock, King's College; John Douglas Magor Cardell, St. Thomas's Hospital; Wilfred Bayley Christopherson, St Bartholomew's Hospital; Charles Eric Cobb, St. Thomas's Hospital; Doris May Collins, London (Royal Free Hospital) School of Medicine for Women; Hedley Chave Cox and Ralph Coyte, St. Bartholomew's Hospital; Joyce Emily Craggs and Nora Annie Crow, London (Royal Free Hospital) School of Medicine for Women; Thomas Morris Davies, St. Mary's Hospital; †Mary Day, London (Royal Free Hospital) School of Medicine for Women; Edwin Frank Deacon, Guy's Hospital; †Elizabeth Denniston and Lilian Mabel Fisher, London (Royal Free Hospital) School of Medicine for Women; Gerald William Thomas Hunter Fleming, University of Durham; Abraham Foner, London Hospital; St. George Bernard Delisle Gray, Guy's Hospital; Magdalena Augusta Hilda Hamel, London (Royal Free Hospital) School of Medicine for Women; †Albert William Holgate, University College; Henry Nevill Hornibrook and Marshall Jackson, St. Bartholomew's Hospital; Vasant Ramji Khanolkar, University College; Muriel Elsie Landau, Mary Kathleen Forsaith Lander, and Alice Lloyd Lloyd-Williams, London (Royal Free Hospital) School of Medicine for Women; Ernest Kenneth Macdonald, St. Thomas's Hospital; Janet McAllister McGill, Kathleen McCrie McKeown, Gladys Matthews, and Vida Sara Maxwell, London (Royal Free Hospital) School of Medicine for Women; Ludlow Murcott Moody, King's College; Edith Mary Ponsonby Morgs, London (Royal Free Hospital) School of Medicine for Women; John Ernest Nicole, King's College and Westminster Hospital; Marguerite Henrietta Pam, London (Royal Free Hospital) School of Medicine for Women; Rowland John Perkins, St. Bartholomew's Hospital; Dorothy Priestley Priestley, University of Leeds; Mary Millicent Prior, London (Royal Free Hospital) School of Medicine for Women; Ernest Frank Rabey, Middlesex Hospital; Edward Douglas Thomas Roberts, St. Thomas's Hospital; Hugh Thornton Rymer, King's College; Edward Jeffrey Samuel, King's College and Charing Cross Hospital; Solomon Nahum Senitzky, London Hospital; Bryan Buckley Sharp, St. Bartholomew's Hospital; Joseph Harold Sheldon, King's College; Charles Ernest Alan Shepherd, King's College and St. George's Hospital; Bertram Leslie Slater, London Hospital; Frances Minnie Spickett, London (Royal Free Hospital) School of Medicine for Women; Gilbert Patrick Staunton and Nai Synn, St. Bartholomew's Hospital; Khiam Soon Tan, University College; Stanley Roy Tattersall, St. Thomas's Hospital; Aubrey Leonard Telling, University of Leeds; Cyril James Thomas, St. Thomas's Hospital: Elsie Maud Vialck, London (Royal Free Hospital) School of Medicine for Women; Robert Lawrence Walker, St. Mary's Hospital; *Austin Darley Wall, St. Bartholomew's Hospital; Arthur Elston Ward, St. Thomas's Hospital; Eugene Wolff, University College; and Sydney Carver Woodhouse, London Hospital.

* Distinguished in Anatomy. † Distinguished in Physiology.
‡ Distinguished in Pharmacology.

N.B.—This list, published for the convenience of candidates, is issued subject to its approval by the Senate.

UNIVERSITY OF MANCHESTER.—At examinations held recently the following candidates were successful in the subjects indicated:—

THIRD M.B. AND CH.B. EXAMINATION.

A. B. Platt.

SECOND M.B. AND CH.B. EXAMINATION.

Elizabeth C. Davies, Ellis Pigott, Marie Wardman, and F. L. Whincup.

Physiology.—James Yates.

FIRST M.B. AND CH.B. EXAMINATION.

Part I., Inorganic Chemistry and Physics.—May Ashburner, Martha F. Barritt, May Blakiston, Vincent Chadwick, Margaret M. Corbold, J. W. Crawshaw, K. V. Deakin, Dorothy M. L. Dyson, A. M. El Aguizy, Evelyn A. Garnett, Olive M. Gimson Archibald Harris, Joshua Harris, Sylvia K. Hickson, J. H. G. Holt, Arthur Ingham, H. A. Lomax, Alexander Maude, W. E. Mitchell, Doris B. Norman, Emily M. Peach, F. L. Pickett, Harry Rosenthal, Gerald Sheehan, Annie E. Sommerhalder, Doris A. Taylor, H. W. Taylor, Soloman Wand, Robert Williamson, and J. B. Wright.

Part II., Biology.—Samuel Adler, Martha F. Barritt, Vincent Chadwick, F. A. van Coller, Phyllis M. Congdon, Margaret M. Corbold, J. W. Crawshaw, K. V. Deakin, Dorothy M. L. Dyson, A. M. El Aguizy, H. P. Fay, F. R. Ferguson, J. B. Fulton, Evelyn A. Garnett, Sylvia K. Hickson, Arthur Ingham, John Jacobs, Irma Jéhansart, Ernest Jones, H. A. Lomax, Alexander Maude, G. L. Meachim, W. E. Mitchell, Doris B. Norman, Emily M. Peach, Annie Rothwell, Gerald Sheehan, Florence G. Sherry, Annie E. Sommerhalder, Doris A. Taylor, H. W. Taylor, Mary I. Turner, Soloman Wand, Robert Williamson, S. J. Woodall, and J. B. Wright.

Chemistry.—F. R. Ferguson and J. N. Laing.

Physics.—F. A. van Coller, H. D. Preston, Florence G. Sherry, and Ethel D. Willis.

Botany.—E. L. Morgan and G. L. Taylor.

DIPLOMA IN PUBLIC HEALTH.

Harold Heathcote, M.D.

FIRST B.D.S. EXAMINATION.

Chemistry.—E. L. Morgan and G. L. Taylor.

DIPLOMA IN DENTISTRY (FIRST EXAMINATION).

G. H. R. Doman, G. F. Langford, and Norman Wood.

Chemistry.—Teresa Candon.

Physics.—A. L. Craggs, Frederick Torkington, and W. R. Williams.

DIPLOMA IN DENTISTRY (SECOND EXAMINATION).

Dental Mechanics.—Frank Lewis and Bertram Wilkinson.

Dental Metallurgy.—D. M. Barnes, Norman Filtcroft, R. L. R. Heelan, Frank Lewis, V. W. Morse, and Matthew Raeside.

DIPLOMA IN DENTISTRY (THIRD EXAMINATION).

R. A. Birkett, T. F. Healey, and James Kershaw.

UNIVERSITY OF SHEFFIELD.—At the Second M.B., Ch.B. Examination, held recently, the following candidates were successful :—

James Newlyn Gale (distinction in physiology), John Vickerman Mainprize, George Eldred Rae, John Ryan, Alice White, and Ethel White.

UNIVERSITY OF DURHAM: FACULTY OF MEDICINE.—At the Convocation held on March 25th the following degrees were conferred :—

Doctor of Medicine for Practitioners of 15 Years' Standing.—Hugh Basil Greaves Newham and Samuel Arnold Sittampalam.

Degree of Bachelor of Medicine (M.B.).—Arthur Farrell Renner Dove, Harold Kingston Graham-Hodgson, Ethne Haigh, George Irving, Arthur Edwin Raine, Alfred Smirthwaite, and Robert Welch.

Degree of Bachelor of Surgery (B.S.).—Arthur Farrell Renner Dove, Harold Kingston Graham-Hodgson, Ethne Haigh, George Irving, Arthur Edwin Raine, Alfred Smirthwaite, and Robert Welch.

Bachelor of Hygiene (B.Hy.)—Bloomfield George Henry Connolly (in absentia) and William Grant.

The following received the Diploma in Public Health (D.P.H.) :—

Bloomfield George Henry Connolly and William Grant.

The following received the Licence in Dental Surgery (L.D.S.) :—

Harold Armstrong Metcalfe, Douglas Edward Sayce, and Lawrence Somerville-Woodiwis.

UNIVERSITY OF ABERDEEN.—At the graduation ceremony on March 28th the following degrees were conferred :—

Doctor of Medicine (M.D.).—Archibald Douglas Pringle.

Bachelor of Medicine (M.B.) and Bachelor of Surgery (Ch.B.).—William Alexander, John Anderson, Mary Ann Chalmers, Arthur Joseph Hawes, Arthur Ambrose Hearne, Stanley Henry, Eva Constance Ironside, Burjorji Sorabji Kanga, Thomas Scott Law, *Robert Daniel Lawrence (second-class honours), Arthur Alexander Mackenzie, Charles Wattie Macpherson, William John Moir, *Arthur George Reid (second-class honours), †Thomas Ogilvie Robson, Albert Edward Barr Sim, and Forbes Simmers.

* Much distinction. † Distinction.

DUBLIN UNIVERSITY SCHOOL OF PHYSIC, TRINITY COLLEGE.—At the recent Hilary term examinations the following candidates were successful :—

PRELIMINARY SCIENTIFIC EXAMINATION.

Botany and Zoology.—George Ernest Sainsbury and Jacobus Frederik Van Staden.

Chemistry.—Falkland Litton Cary, Ivan Wakefield Beatty, Leo Vincent Clifford, and Richard Bernard Shaw.

Physics.—Maurice Nurock, John Lait, Janie Millar Cummins, Herbert Francis Mooney, William Bernard Joseph Pemberton, Robert Henry Mulhall Corbet, Doris Louisa Graham, Leonard Abrahamson, David John Browne, Francis Victor Small, Percival Israel Levitt, William James Alexander Russell, Robert Dormer, Christopher John Lawrence Brock, Robert Anthony O'Meara, Eileen Hilda Dowse, Elsie Hilda Burns, Mervyn Edmund McBrien, Edward Haslett Frazer, Thomas Donald Gordon, Patrick Joseph Healy, Isaac Levy, Charles John Shortt, Olive Baile, William Burton Fox, Joseph Ballantyne Maguire, James Alexander Smith, Basle Stuart Smyth, Moira Mary Brown, Richard Victor Dowse, Nora Griffith Samuel Wallace Jameson, James Joseph Patrick Kelly, William Theodore Micks, Eric Richard Murray, Frederik Wynand Pienaar, Henry Patrick Stack, Herbert William Strong, and Cecil Samuel Wilson.

INTERMEDIATE MEDICAL EXAMINATION.

Part I., Anatomy and Physiology.—Alewyn Johannes Vorster, Reuven Rosenkov, Cyril Daniel Brink, Jan Jacobus Gabriel de Kock, William Richard Burns Olive Gertrude Blackham, Henry Blundell Van der Merwe, William Bruce Briggs, and Lionel Wigoder.

Part II., Applied Anatomy and Applied Physiology—Harry Lee Parker, Victor Millington Synge, Crawford Law Wilson, Lindley Albertyn, Patrick Bernard Molony, Robert Meade Daly Devereux, Mary Christina Sheppard, Johannes Cornelius Fouche, William Leech Young, William Philp Elford, Wilfred Vincent Pellissier William Sweetnam, Ernest Edward Rollins, Kenneth Greer, Thomas Hugh Robinson McKiernan, Paul Herbert Shelley Smith, Thomas Bousefield Herrick Tabuteau, Eric James Lydon, William Alfred Shannon, Percival Atkin Dorm r, Leslie James Nugent, William Frederick Mc'onnell, Thomas Scannel McDonald, Jason Grant Bird, Ethel Marjorie Luce, Eric Stuart Ewing Mack, James Arthur William Cullen, Thomas Mulock Bentley, James Michael Hill, Daniel McElwee, Olive Gertrude Blackham, John Benson McGranahan, and Pieter Johannes Swanepoel.

FINAL MEDICAL EXAMINATION.

Part I., Materia Medica, Pathology, Medical Jurisprudence, and Hygiene.—Patrick Rock, Robert Wallace Nesbitt, Joseph Roland Brennan, Hirsh Brill, William James McClintock, Sydney Verner Furlong, Harry Banks, Andries Adrian Louw Albertyn, Arthur Isaac Steyn, Charles Perceval Chambers, Willem Petrus Lubbe, Crosbie Weir, Sidney Alfred Clark, Thomas Edward Hill, Fleetwood William Porter Sullivan (Materia Medica and Pathology), Michiel Christoffel Dippenaar (Pathology, completing examination), Millicent Hamilton-Johnstone (Materia Medica, Medical Jurisprudence, and Hygiene, completing examination), and Hastings Harley Molloy (Materia Medica, completing examination).

Part II., Surgery—Joseph Warwick Bigger, Thomas Lane, Charles Lewers McDonagh, Louis Blumberg, Millicent Hamilton-Johnstone, Mortimer McGee Russell, Eileen Gertrude Gwynn, and Frederick John Murphy.

Part II., Medicine.—Joseph Warwick Bigger, Robert Clement Burke Ramsay, George William Doran, John Thorp Westby, Millicent Hamilton-Johnstone, Eileen Gertrude Gwynn, and Rupert Gordon.

Part II., Midwifery.—Millicent Hamilton-Johnstone, Joseph Godfrey Bird, Frank Healy, John Thorp Westby, Sydney Verner Furlong, and Henry Stephen Campion.

DIPLOMA IN PUBLIC HEALTH.

Part I., Bacteriology, Pathology, Chemistry, Physics, and Meteorology.—Brian Dodwell Crichton.

Part II., Sanitary Engineering, Vital Statistics, Public Health, Hygiene, and Epidemiology.—John Robert Dunn Holtby, Marjorie Chapman, and Florence Colquhoun.

METROPOLITAN ASYLUMS BOARD.—A three months' course of lectures and demonstrations in hospital administration for the diploma in public health will be given at the North-Western Hospital, Lawn-road, Hampstead, N.W., on Tuesdays and Fridays at 5 P.M., beginning Tuesday, May 2nd. A similar course will be given at the Grove Hospital, Tooting-grove, Tooting Graveney, S.W., on Mondays and Fridays at 5 P.M., beginning Friday, April 7th. Medical men desiring to attend at either hospital are requested to send a fee of £3 3*s.* to the clerk to the Metropolitan Asylums Board, Embankment, E.C., giving their full name and address.

THE MEDICAL AND DENTISTS' REGISTERS.[1]—From the Medical Register, 1916, just issued, it will be seen that the total number of registered medical practitioners up to Dec. 31st, 1915 was 43,225, the corresponding figures for 1914 being 42,378. The average number of names added to the Register by registration for the last 24 years is 1284, and for the last five years 1265. In 1915 death accounted for the removal of 774 names, as compared with 761 in 1914. The total number added to the Register in 1915 was 1526, which includes 181 colonial and 88 foreign registrations. In 1914 there were only 36 names in the foreign list, and the increase is mainly due to the inclusion of Belgian practitioners owing to the situation created by the war. The Dentists' Register for 1916, also just published, contains 5453 names, as against 5426 in the issue for 1915. The 1916 list includes 4005 graduates and licentiates in dental surgery, 9 colonial licentiates, and 14 foreign dentists.

BRITISH FIRE PREVENTION COMMITTEE.—This committee has reissued its "Air Raid Warnings," as in many cases it has been found that recommendations made last year in the matter of simple fire precautions to meet air-raid fires are again being overlooked. Warning notices to which special attention may be called here are No. 10 for hospitals and No. 11 for convalescent homes and hostels. Warning for factories and works engaged on Government contracts is No. 16, and the farmers' warning in respect of hay-ricks, stacks, and farm produce is No. 14. For voluntary workers engaged on Red Cross and similar work warning No. 28 has been specially printed to meet the requirements of their workrooms, whilst those in charge of Y.M.C.A. huts and other institutes for soldiers and munition workers should obtain No 25. Warning No. 17A deals especially with the air-raid danger, and circulars No. 18A and No. 18B refer to the general air-raid question and the ordinary householder's aspect respectively. Special notices are issued for ministers of religion in charge of places of worship; for education authorities, headmasters and headmistresses of elementary and secondary schools; and for managers of theatres, music halls, and cinema houses. Requests for notices and circulars should be addressed to the Registrar, The British Fire Prevention Committee, 8, Waterloo-place, London, S.W.

THE Holborn Maternity Centre and Invalid Kitchen, of 75 Lamb's Conduit-street, W.C., held a Baby Show on Wednesday last of infants who had for at least three months previously attended the weekly consultations of Dr. Dorothea Colman at the centre. Fifty mothers brought their babies. The judging was in the hands of Dr. Harold Waller and Miss Hadden, of the Bloomsbury District Nursing Association, assisted by Miss Thomas, and the prizes were distributed by Mrs. Parker, the Mayoress of Holborn. The Maternity Centre, which is a voluntary one, and, except for the Local Government Board grant, dependent on voluntary aid, may feel proud of this public recognition of its usefulness.

[1] Medical Register, 1916. Published for the General Medical Council by Constable and Co., London. Price 10*s.* 6*d.* Dentists' Register, 1916. Same publishers. Price 3*s.* 4*d.*

CENTRAL MIDWIVES BOARD.—Special meetings of the Central Midwives Board were held at Caxton Hall, Westminster, on March 15th and 17th, with Sir Francis H. Champneys in the chair. A number of midwives were struck off the roll, the following charges, amongst others, having been brought forward: The midwife being in attendance at a confinement and the child suffering from inflammation of, and discharge from, the eyes, and continuing so to suffer, she did not explain that the case was one in which the attendance of a registered medical practitioner was required, as prescribed by Rule E. 20 (5); she discontinued her attendance at a time when the child was so suffering; the midwife being unable to take and record the pulse and temperature of patients in such manner as to comply with Rule E. 13; not keeping her register of cases as required by Rule E. 23. A midwife, notwithstanding her omission to visit a patient on three days during the puerperium, had entered false records of daily visits and of daily pulse and temperature. Although not present at the birth of the child, a midwife made and subscribed a declaration under the Registration of Births and Deaths Act, 1874, that the child was still-born; medical aid having been sought for the patient she neglected to notify the local supervising authority thereof, as required by Rule E. 21 (1) (a); being drunk at the time of the delivery; neglecting to remove the soiled linen, placenta, and other matters from the neighbourhood of the patient and from the lying-in room as soon as possible after the labour, as required by Rule E. 10; douching the patient in a negligent and dangerous manner, using an enema syringe and employing only a single basin for the purpose, and neglecting to provide for the cleanliness and comfort of the patient, as required by Rule E. 11. A midwife not taking with her to a confinement the appliances and antiseptics required by Rule E. 2; neglecting to disinfect her hands and forearms and to wash the patient's external parts with soap and water and to swab them with an efficient antiseptic solution, as required by Rules E. 3 and 7 (b); not being scrupulously clean in every way, as required by Rule E. 1; a child suffering from serious skin eruptions on and after the ninth day, the midwife did not explain that the case was one in which the attendance of a registered medical practitioner was required, as prescribed by Rule E. 20 (5), and she did not hand to the husband or the nearest relati e or friend present the form of sending for medical help, properly filled up and signed by her, in order that this might be immediately forwarded to the medical practitioner, as required by Rule E 19. The midwife being from time to time in contact with cases of infectious illness—namely, pemphigus neonatorum—she neglected to undergo disinfection of herself, her appliances, and her clothing to the satisfaction of the local supervising authority before going to another maternity case, as required by Rule E. 5, and she did not understand and employ the antiseptic precautions required by Rules E. 3 and 7.

MEDICAL SICKNESS, ANNUITY, AND LIFE ASSURANCE FRIENDLY SOCIETY.—The annual general meeting of this society was held at the offices, 300, High Holborn, London, W.C., on March 28th, Dr. F. J. Allan presiding. Dr. Allan in his address presenting the annual report said that since the war broke out the experience of all insurance corporations had been exceptional, but that the society had done during the year a good deal of new business, and had a net gain at the close of 70 new members, while a considerable proportion had increased their insurance for sickness benefit. Nearly £20,000 had been paid during the year to members in sickness and accident benefit. The committee, he said, now proposed the reopening of the annuity fund. On the foundation of the society an annuity fund was formed, but the terms were not found equitable, and this business was discontinued. The absence of an annuity fund being now felt to be a defect, Mr. S. G. Warner, F.I.A., had been consulted, and had drawn up a scheme. Holders of annuities would be given several options, and in the event of death or surrender before the age of 65 all the premiums paid, except the first, would be returned with simple interest at 3 per cent. per annum. Members holding annuity policies under the old tables could not transfer to the new proposal. Considerable depreciation had occurred in high-class securities, and investments if realised now would suffer a loss. At the quinquennial valuation the investments had to be valued at the prices then obtaining, and it was decided to establish an investments reserve fund, to which about £4000 had been added, and the surplus balance of the management fund is being kept in hand in case of emergencies. The death of Mr. Addiscott, who had acted as secretary since 1893, and, on retirement, as actuary, was referred to. The society also mourned the loss of Mr. G. A. Heron, one of its trustees, who took great interest in the work. It was not proposed to recommend anyone to fill the vacancy, as they already had four good trustees in Sir Dyce Duckworth, Mr. W. E. Hempson, Sir Victor Horsley, and Dr. Dawson Williams. The chairman then formally moved the adoption of the report, which was seconded by Dr. Major Greenwood and duly carried. The officers for the year, submitted to the meeting in a list, were elected *en bloc*.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

The Budget.

CONSIDERABLE additions to taxation are proposed in the Budget which Mr. MCKENNA, as Chancellor of the Exchequer, presented on Tuesday, April 4th. In regard to income tax, the proposals are that earned income up to £500 a year shall pay 2*s.* 3*d.* in the £, instead of 2*s.* 1 1/5*d.*, as at present. For incomes between £500 and £1000 a year the rate will be 2*s.* 6*d.* in the £. By successive stages the scale is carried up to 5*s.* in the £, which will be paid on earned incomes where the total income exceeds £2500. On unearned income the new scale will begin at 3*s.* on incomes not exceeding £300, and will rise by stages of 6*d.* to 5*s.*, which will be paid on incomes exceeding £2000. These charges are subject to the existing statutory abatements and allowances. The licence duty on motor-cars and motor-cycles is to be greatly increased. The present scale in the case of motor-cars ranges from 2 guineas up to 40 guineas, and on motor-cycles there is a uniform charge of £1. The Chancellor of the Exchequer proposes that the duty on cars not exceeding 16 h.p. will be doubled, and on higher power cars trebled. Motor-cycles not exceeding 4 h.p. will pay £2 2*s.*, and above 4 h.p. three-quarters of the duty chargeable on motor-cars of like horse power. Mr. MCKENNA also proposes taxes on amusements, railway tickets, matches, and mineral waters, and increased taxes on sugar, cocoa, coffee, and chicory.

HOUSE OF COMMONS.

WEDNESDAY, MARCH 29TH.

The Royal Commission on Venereal Diseases.

Mr. KING asked the Secretary to the Admiralty whether his attention had been drawn to the recommendation in the Report of the Royal Commission on Venereal Diseases that a man in the navy should not be discharged if suffering from any such disease; whether any legislation was required in order to enable effect to be given to that recommendation, and, if so, whether he was prepared to introduce such legislation.—Mr. MACNAMARA replied: I think my honourable friend will see that the questions raised in the recommendation to which he refers is one which will call for careful consideration. He is, of course, aware that the report was signed so recently as Feb. 11th, 1916, and was publicly circulated in the early days of the present month.

Mr. KING: May we be sure that it is to receive careful attention at once and not put off further?—Mr. MACNAMARA: The matter will be considered, but I can give no undertaking as to it.

Mr. KING asked the right honourable gentleman whether his attention had been drawn to the recommendation in the Report of the Royal Commission on Venereal Diseases that men joining the navy should be warned at the earliest possible moment of the grave dangers which venereal diseases involved, and that the warning should be formally repeated at intervals of not less than a year; whether the existing regulations provided for such warnings; and, if not, whether he would cause the regulations to be amended so as to secure that the recommendation of the Commissioners should be carried into effect.—Mr. MACNAMARA answered: The reply to the earlier parts of the question being in the affirmative, the last part of the question does not therefore arise.

Mr. KING asked the Parliamentary Secretary to the Local Government Board whether it was the intention of the Board to use its power under the Public Health Acts to supply drugs used in connexion with venereal diseases free to medical practitioners, as recommended in the Report of the Royal Commission on Venereal Diseases; and whether legislation was required to enable the Board to secure accurate statistical information as regarded the prevalence

of disease among persons receiving institutional treatment, as recommended in the Report of the Royal Commission, and, if so, whether it was his intention to introduce such legislation.—Mr. HAYES FISHER said in reply: I cannot say more at the present time than that the Report of the Royal Commission as a whole is under the consideration of the departments concerned.

Mr. KING: Has the right honourable gentleman considered whether a clause might not be added to the Local Government (Emergency Provisions) Bill which would bring the recommendations within the purview of the Bill?—Mr. HAYES FISHER: My right honourable friend will consider that.

Mr. KING asked the Home Secretary whether his attention had been drawn to the recommendations in the Report of the Royal Commission on Venereal Diseases with respect to the examination of prisoners; whether it was his intention to carry them into effect; and whether he would give an undertaking that no female prisoner or female person detained in a Borstal institution should be locally examined except by a woman doctor.—Mr. H. SAMUEL wrote in reply: The compulsory examination of all prisoners to the extent suggested by the Royal Commissioners would under present conditions be impracticable. These recommendations cannot be dealt with apart from the other proposals of the Commission, but the whole subject will receive careful consideration, and it is impossible at present to say what course may be taken with respect to prisons.

Medical Arrangements in Mesopotamia.

Sir JOHN JARDINE asked the Under Secretary for War whether steps would forthwith be taken to secure for the forces on the rivers Tigris, Euphrates, and Karun, in addition to medical and surgical requirements for the case of wounds, such drugs and appliances as had been proved useful in cases of plague, cholera, malarial fever, sunstroke, guinea-worm, and other diseases likely to occur in the approaching very hot weather in the deserts of Mesopotamia.—Mr. TENNANT replied: I can assure my honourable friend that all the resources at the disposal of the War Office, whether in personnel or in stores, have been offered to the Commander-in-Chief in India.

Uninoculated Men in the Army.

Mr. ANDERSON asked the Under Secretary for War whether he would issue instructions that recruits who objected to antityphoid inoculation were to be allowed leave in the ordinary way, providing they produced evidence from the medical officer of health for the district they intended to visit stating that the neighbourhood was free from typhoid fever.—Mr. TENNANT answered: The necessity of preventing the introduction of enteric fever into military camps is paramount, and this necessitates that leave shall be granted sparingly to men who object to inoculation. I do not think that the suggestion made in the latter part of the question provides sufficient safeguard that uninoculated men on leave will not bring back infection.

Health Conditions at Fovant Camp.

In reply to Mr. NIELD, Mr. TENNANT (Under Secretary for War) wrote: I have obtained a report from the medical officer at Fovant (Salisbury Plain) who states that no training ground there is in a condition even remotely approaching that of a muddy marsh, and that there in nothing in the condition of the training grounds that constitutes danger in any degree to the health of the troops. Four deaths occurred at Fovant last year—one from diabetes, one from nephritis, one from brain tumour, and one from bronchitis—but none of these was due to the condition of the training ground. Extensive drainage works are not necessary. Measures which have been taken will render the conditions of this training ground as good as obtains elsewhere. The ground at Fovant is good sandy subsoil and dries up remarkably quickly.

Insurance Benefits and Medical Evidence.

Mr. STUART-WORTLEY asked the representative of the National Insurance Commissioners whether it had been found that a woman insured in the Approved Society conducted by the Prudential Assurance Company, and receiving a weekly allowance as insurance benefit therefrom, could be deprived of that benefit by the individual decision of a referee appointed by the Prudential Company without previous knowledge of the case and without consultation or communication with her panel doctor; whether a woman thus deprived of benefit or otherwise treated with harshness could under No. 13 (30 b) of the Approved Society's rules be required, as a condition of obtaining redress or getting her case submitted for impartial inquiry, to deposit a sum which might amount to so much as £1, and in case of an adverse decision to forfeit the deposit and pay the whole of the expenses of the arbitration; whether along with the notice of deprivation of benefit any information was given to the insured person as to the existence of a right of appeal or the nature of the steps to be taken to bring about such appeal; whether the said Rule 13 was one of 48 rules which covered 72 pages of a printed book; and whether it was proposed to leave unaltered a state of the law which made benefits so precarious and redress so difficult to persons of small means from whom compulsory contributions had been levied.—Mr. CHARLES ROBERTS replied: It rests with the society of which an insured person is a member to determine, subject to the member's right of appeal, whether the facts of a given case justify the payment of benefit and medical evidence obtained in accordance with the rules is for the guidance of the society in coming to a decision. In the case of the particular society named in the question, I understand that where a member is required to submit herself for special medical examination under the rule referred to, steps are now taken to inform the doctor by whom she has been attended, and that where the matter is referred to a medical umpire, it is not the society's practice to require any deposit, although the payment of a deposit is authorised by the rule. I am also informed that in all cases in which payment of benefit is suspended on the report of a medical referee the member is now furnished with information as to the course which she may pursue if dissatisfied with the society's decision. The particulars given in the fourth part of the question are substantially correct. Copies of the rules are available to members on payment of a sum not exceeding 2*d*. As regards the last part of the question I am sending the right honourable gentleman a copy of a circular issued by my department in May last on the subject of procedure in disputes between societies and their members.

THURSDAY, MARCH 30TH.

The Health of Munition Workers.

Lord H. CAVENDISH-BENTINCK asked the Secretary to the Ministry of Munitions whether he was aware that the Health of Munition Workers Committee had recommended, in view of the increase of industrial disease and accidents in controlled establishments, that a sickness register should be kept, that provision should be made for the medical examination of all workers on their admission to the factory, that one or more trained nurses should be appointed, that a committee of workers should be entrusted with the duty of investigating every accident which occurred in their own workplace, that local dressing stations should be established in each workplace for minor injuries and a central dressing station for more serious cases, and that provision for organised medical treatment should be made in every munition factory; and what steps had been taken to carry out the recommendations of the committee.—Dr. ADDISON replied: My right honourable friend is about to issue to controlled establishments a circular containing a summary of the recommendations made in this and two other reports recently received from the committee. Active steps are also being taken by specially appointed officers of the Ministry to bring home to employers in certain factories the need for action on the lines recommended by the committee.

Medical Arrangements in Mesopotamia.

Mr. MALCOLM asked the Secretary of State for India whether Sir W. Vincent and General Bingley, being subordinate officers of the Government of India, had the power to examine and report upon the share borne by the military and financial members of the Viceroy's Council in planning and executing the Mesopotamian campaign and the shortcomings connected therewith; and, if they were precluded from so doing, would he appoint an independent commission to take the necessary evidence from the highest responsible authorities in India.—Mr. CHAMBERLAIN replied: The answer to both questions is in the negative. The inquiry is confined to the medical and hospital arrangements of the Mesopotamian campaign. I assume that it will embrace all matters relative to the sufficiency or otherwise of the provision made in India and Mesopotamia for medical personnel, stores, and appliances, also as to the organisation of medical relief and the arrangements for dealing with the sick and wounded in the field, at the base, and in transit to the base. I have issued instructions that the Commission should fearlessly ascertain and assign the responsibility for the breakdown of relief, whether individuals or the system are to blame. Until the Commission has reported I cannot say whether a further inquiry will be needed. The Viceroy has informed me that he has invited Mr. E. A. Ridsdale, Red Cross Commissioner, now *en route* from this country to Mesopotamia, to join the Commission as a member.

TUESDAY, APRIL 4TH.

Tuberculous Soldiers.

Mr. TENNANT (Under Secretary for War) informed Mr. R. MCNEILL that the arrangements in force were that soldiers who became medically unfit for further service from tuberculosis were not sent to their homes when discharged from the army. In the case of those who were insured under the National Insurance Act, arrangements existed with the National Insurance Commission by which men, if they desired, were sent to sanatoria. Similar arrangements existed with the Local Government Board for men who were

not insured, sanatorium treatment being provided as a special privilege.

Hospital Accommodation at Blandford Camp.

Mr. CAREW asked the Under Secretary for War whether he was aware of the insufficient hospital accommodation at Blandford camp, Dorset; whether recruits underwent a proper medical examination before they were called up for service; and whether information was sent to parents or friends when cases of dangerous illness occurred.—Mr. TENNANT answered: The hospital accommodation at Blandford is considered to be sufficient. Serious cases are conveyed by motor transport to Wareham, and, if necessary, to other hospitals. The answers to the second and third parts of the question are in the affirmative.

The Eyesight of Recruits.

Mr. TOUCHE asked the Under Secretary for War whether recruiting authorities were acting in accordance with instructions in accepting for general service men who were unable to see 6/60 with either eye without glasses.—Mr. TENNANT wrote in reply: The minimum standard of eyesight without glasses for general service is 1/4 of the normal in one eye and less in the other. Men with vision below this standard should not be accepted for general service.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

FARRER, R. T., M.R.C.S., L.S.A., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Brighouse District of the county of Yorks, West Riding.

GRANT, J. DUNDAS, M.D. Edin., F.R.C.S. Edin., has been appointed Surgeon in charge of the Ear, Throat, and Nose Department of the New Zealand Military Hospital, Walton-on-Thames.

MAINS, J. H., L.R.C.P. Lond., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Clackmannan District of the county of Clackmannan.

MARTIN, ROBERT COLLINS, L.R.C.P. Lond., M.R.C.S., has been appointed Medical Officer for the No. 1 District by the Bristol Board of Guardians.

MORGAN, ALBERT THOMAS, L.S.A. Lond., M.D. Brux., has been appointed Public Vaccinator for the Ashley District by the Bristol Board of Guardians.

MORGAN, JOHN FREDERICK HENRY, L.R.C.P. Lond., M.R.C.S., has been appointed Medical Officer for the No. 2 District by the Bristol Board of Guardians.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).
When the application of a Belgian medical man would be considered the advertisers are requested to communicate with the Editor.

BIRMINGHAM AND MIDLAND EYE HOSPITAL, Church-street.—Resident Surgeon.

BIRMINGHAM GENERAL DISPENSARY.—Resident Medical Officer, unmarried. Salary £250 per annum, with apartments, attendance, &c.

BRISTOL GENERAL HOSPITAL.—Casualty House Surgeon. Also House Physician. Both for six or three months. Salary at rate of £175 per annum each, with board, residence, &c.

BRISTOL ROYAL INFIRMARY.—House Physicians and House Surgeons. Salary at rate of £120 per annum, with board, apartments, and laundry.

BRIXTON INFANT WELFARE CENTRE, 56, Tulse Hill, S.W.—Female Medical Practitioner for Wednesday Afternoon Consultations.

BURNLEY, VICTORIA HOSPITAL.—Female House Surgeon. Salary £160 per annum, with residence, board, and washing.

BURY INFIRMARY.—Senior House Surgeon. Salary £250 per annum, with board, residence, and washing.

CAMBRIDGESHIRE ASYLUM, Fulbourn, near Cambridge.—Junior Assistant Medical Officer, unmarried. Salary £200 per annum, with board, lodging, washing, and attendance.

CHESTERFIELD AND NORTH DERBYSHIRE HOSPITAL.—Second House Surgeon. Salary £150 per annum, with board, apartments, and laundry.

DERBY, DERBYSHIRE ROYAL INFIRMARY.—House Physician and Casualty Officer. Salary £200 per annum, with board, residence, &c.

DONCASTER ROYAL INFIRMARY AND DISPENSARY.—House Surgeon. Salary £250 per annum, with board, lodging, and washing.

DUDLEY, GUEST HOSPITAL.—Assistant House Surgeon for six months. Salary £120 per annum, with board, residence, and washing.

EXETER, ROYAL DEVON AND EXETER HOSPITAL.—Senior House Surgeon. Salary at rate of £250 per annum, with board, apartments, and washing.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton.—House Physician for six months. Salary 30 guineas.

LANCASTER, COUNTY ASYLUM.—Temporary Assistant Medical Officer. Salary 6 guineas per week, with board, apartments, washing, and attendance.

LEEDS PUBLIC DISPENSARY.—Female Resident Medical Officer. Salary £130 per annum, with board, residence, and laundry.

LIVERPOOL, HIGHFIELD MILITARY HOSPITAL.—Assistant Resident Medical Officer. Salary £300 per annum, with rations, apartments, &c.

LONDON HOSPITAL.—Two Vacancies on Assistant Obstetric Staff.

LONDON TEMPERANCE HOSPITAL, Hampstead-road, N.W.—Assistant House Surgeon for six months. Salary at rate of 120 guineas per annum.

NEW HOSPITAL FOR WOMEN, Euston-road.—Female Senior Clinical Assistant (Out-patient Department), Thursday afternoon. Also Female Clinical Assistants. Also Female Resident Medical Officer at House of Recovery, New Barnet. Salary £60 per annum.

NORTHAMPTON GENERAL HOSPITAL.—Two House Surgeons. Salary £150 per annum each, with apartments, board, washing, and attendance.

PUTNEY HOSPITAL, Lower Common, S.W.—Resident Medical Officer. Salary £150 per annum, with rooms, board, and laundry.

QUEEN'S HOSPITAL FOR CHILDREN, Hackney-road, Bethnal Green, E.—House Surgeons for six months. Salary £100 per annum, with board, residence, and washing.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—Examiners under the Conjoint Examining Board in England.

ROYAL FREE HOSPITAL, Gray's Inn-road, W.C.—Male and Female House Physicians and House Surgeons for six months. Salary £50 per annum, with board, lodging, and washing.

SHEFFIELD, JESSOP HOSPITAL FOR WOMEN.—Female Junior House Surgeon, unmarried. Salary £80 per annum, with board, residence, and laundry.

SHEFFIELD ROYAL HOSPITAL.—Honorary Ophthalmic Surgeon.

SHEFFIELD ROYAL INFIRMARY.—House Surgeon. Salary £100 per annum, with board and residence.

SOUTHAMPTON FREE EYE HOSPITAL.—House Surgeon. Salary £100 per annum, with board, lodging, and laundry.

THROAT HOSPITAL, Golden-square, W.—Resident House Surgeon.

VICTORIA HOSPITAL FOR CHILDREN, Tite-street, Chelsea, S.W.—House Surgeon. Salary at rate of £200 per annum, with board and lodging.

WARWICKSHIRE AND COVENTRY JOINT COMMITTEE FOR TUBERCULOSIS.—Resident Medical Officer for Bramcote Sanatorium, near Nuneaton. Salary at rate of £250 per annum, with board, &c.

WESTMORLAND CONSUMPTION SANATORIUM AND HOME, Grange-over-Sands.—Second Assistant. Salary £200 per annum, with apartments, board, and laundry.

WINCHESTER, ROYAL HAMPSHIRE COUNTY HOSPITAL.—Female Assistant House Surgeon. Salary £100 per annum, with residence, board, and washing.

Births, Marriages, and Deaths.

BIRTHS.

BIGGER.—On April 2nd, at Cairo, the wife of W. K. Bigger, Lieutenant, R.A.M.C., of a son.

CLARKE.—On March 28th, the wife of Lieutenant H. H. Clarke, R.A.M.C., of a daughter.

IREDELL.—On April 2nd, at Cumberland-terrace, Regent's Park, the wife of Dr. C. B. Iredell, of a son.

PARTRIDGE.—On March 28th, the wife of Victor Stanley Partridge, L.R.C.P. Lond., M.R.C.S., L.S.A. Lond., of Coldharbour-lane, S.E., Temporary Lieutenant, R.A.M.C., of a daughter.

ROBINSON.—On March 25th, at The Cottage, Blundellsands, the wife of G. Burton Robinson, Captain, R.A.M.C. (T.F.), of a son.

SPARROW.—On March 29th, at Essex-road, Watford, the wife of E. C. Sparrow, M.B., Temporary Lieutenant, R.A.M.C., of a daughter.

MARRIAGES.

DEVINE—MILES.—On April 1st, at Our Lady and St. Joseph's, Poplar, Major J. A. Devine, D.S.O., R.A.M.C., of Winnipeg, Canada, to Mary Hilda, only daughter of the late Henry Miles, of Liverpool, and of Mrs. Miles, of Cambridge-road, Southport.

HUNTER—CAPE.—On March 31st, in London, by licence, Captain Ronald Nelson Hunter, R.A.M.C., to Isabella, eldest daughter of Mr. and Mrs. J. Wilson Cape, of Carlisle.

LEECH—BARKER.—On April 3rd, at Leonard Stanley, Ernest Bosdin Leech, M.D. (of Manchester), Captain, R.A.M.C., to Mary, daughter of the late Rev. H. Walder, of Jamaica, and widow of Robert Barker, of Marple.

LUCAS—MCKAIL.—On April 3rd, at St. James's, West Hampstead, Captain Reginald Blockley Lucas, M.B., M.S., R.A.M.C., to Cecily Helen, only daughter of Mrs. John McKail.

MALLET—ALLEN.—On April 1st, at Stoke Church, Devonport, Lieutenant H. H. Mallet, L.D.S., Dental Surgeon to H.M. Forces, B.E.F., to F. Ethel Allen, elder daughter of Lieutenant-Commander J. H. Allen, R.N., and Mrs. Allen, of Stoke.

DEATHS.

LAMBERT.—On March 29th, died on active service, Major F. C. Lambert, R.A.M.C., aged 37 years.

LEON.—On March 30th, at Grove-road, Southsea, from cerebro-spinal meningitis, John Temple Leon, M.D. Lond., Captain, R.A.M.C.(T.), aged 50 years.

OWEN.—On April 2nd, suddenly, Samuel Walshe Owen, L.R.C.P., M.R.C.S., L.S.A., in his 66th year.

N.B.—A fee of 5s. is charged for the Insertion of Notices of Births, Marriages, and Deaths.

The following magazines, journals, &c., have been received:—British Journal of Dermatology, Journal of the Royal Army Medical Corps, British Journal of Inebriety, Proceedings of the Royal Society of Medicine, Practitioner, British Journal of Dental Science, Therapeutic Gazette, Journal of Nervous and Mental Disease, British Dental Journal, Revue d'Hygiène, &c.

Notes, Short Comments, and Answers to Correspondents.

VITAL STATISTICS OF BRITISH GUIANA.

A REPORT, prepared by Mr. George D. Bayley, Assistant Government Secretary, on the Blue-book of British Guiana for the year ended March 31st, 1915, has been presented to Parliament. It gives the population of the colony, as estimated at the end of 1914, as 309,938—161,417 males and 148,521 females. Calculated on the basis of these figures, the birth-rate for the year was 34·4 per 1000, as compared with 34·6 per 1000 in the previous year. The mean rate for the preceding five years was 30·7 per 1000. Amongst the several races representing the community the birth-rates per 1000 of population were as follows:—Portuguese, 27·4; Europeans other than Portuguese, 12·8; East Indians, 35·2; Chinese, 31·0; blacks, 33·7; and mixed races, 35·0. Of the births registered 39·9 per cent. were legitimate and 60·1 per cent. illegitimate. The death-rate was 24·5 per 1000 of the estimated population as compared with 24·2 in the previous year. The mean rate for the previous five years was 30·0 per 1000. The death-rate of each of the various races was:—Portuguese, 34·6; Europeans other than Portuguese, 12·2; East Indians, 25·3; Chinese, 28 6; blacks, 32·6; and mixed races, 20·9 per 1000 of estimated population. The deaths of children under 1 year of age numbered 1811, or 170 per 1000 births, showing a further slight decrease as compared with previous years. In this connexion it is noted that invaluable work has been done by the Baby Saving League, a scheme inaugurated by Lady Egerton (wife of Sir Walter Egerton, K.C.M.G., Governor of the Colony) to instruct mothers in the rearing and care of their infants.

The six principal causes of death throughout the colony during the past five years are given by the Registrar-General as follows:—Malarial and other fevers, 16·4 per cent.; bronchitis and pneumonia, 12·6; bowel complaints (including dysentery, diarrhœa, and enteritis), 11·3; kidney diseases, 8·2; phthisis and other forms of tuberculosis, 6·9; and diseases of early infancy (including infantile debility and icterus), 7·2. Enteric fever is notifiable, and in 1914 262 cases were notified, with 100 deaths. Antimalaria and antimosquito measures are being generally and gradually enforced, with visible signs of success. In 1906–7 33,748 cases of malarial fever were treated in the sugar estates' hospitals; at the end of 1914–15 the numbers had fallen to 8421. Quinine has been for some years sold at all the post-offices to the general public at cost price; it is also distributed at the sugar estates free to labourers. Prisoners, members of the police force, the inmates of the industrial school at Onderneeming and of the orphan asylum, and the attendants at the public institutions are also supplied by the colony with free quinine, and administration of quinine to school children is now adopted by 106 schools out of 227. Ankylostomiasis, which has engaged the attention of the medical department for several years, has considerably decreased on the sugar estates; this is attributed to improved sanitary measures and the erection of latrines. The International Health Commission (Rockefeller Foundation) has carried out an active campaign against this disease in the villages.

The hospitals and asylums were maintained during the year in an efficient condition. There are five public hospitals in the principal centres, and the outlying districts are served by dispensary hospitals. The immigration law also requires the maintenance of hospitals on every plantation on which there are indentured East Indian labourers, and those institutions are available for the treatment of emergency and pauper cases from the general community. There were 529 patients in the public hospitals at the beginning of the year, and 11,692 were admitted during the 12 months, the daily average being 484. There were 1431 deaths. In addition to those admitted to hospital, outdoor treatment was given to 39,357 persons. The daily average of inmates in the Lunatic Asylum was 770; 77 were discharged cured and 65 died. At the Leper Asylum there were 383 patients when the year began—263 males and 120 females—and during the year 88 were admitted.

AN IMPROVED LIFE-SAVING WAISTCOAT.

A PERFECT device for keeping an individual afloat in case of sudden immersion has yet to be invented, the various collars, belts, and waistcoats intended for this purpose having the defect of bulkiness, while in the case of apparatus needing inflation circumstances may prevent the necessary operation being performed in time to save the life of the wearer, and it is conceivable that the mechanism might fail at the critical moment. In order to overcome these difficulties a waistcoat has been designed which is less bulky than others of its kind. A demonstration of this apparatus, which is named the Ever-ready Life-saving Waistcoat, was witnessed recently by our representative at the swimming baths attached to the headquarters of the Young Men's Christian Association, Tottenham Court-road, W.C., when a swimmer and a non-swimmer, fully clothed and shod with heavy boots, who each wore the waistcoat, jumped or dived into the bath, and after a momentary submersion rose to the surface and floated in a semi-upright position with the head thrown somewhat backward. The waistcoat consists of two separate waistcoats, one superimposed on the other and joined in such a manner that a layer of air is kept between them, thus assisting the buoyancy of the article. The inner waistcoat consists of a single thickness of waterproof material cut to fit the wearer, while the outer waistcoat, which fits the body loosely, is made of two thicknesses of the same material padded with kapok. (Kapok is the silky white floss developed in the fruit buds of the white silk cotton tree and has a specific gravity considerably less than that of cotton.) The trials, which were eminently satisfactory, suggest that travellers and ships' officers will find the garment useful as a life-saving apparatus, but it might be found inconvenient by members of a crew for wearing while engaged in their ordinary occupations about the ship, and most people would probably find the waistcoat uncomfortably warm save in cold latitudes or in cold weather. It can be adjusted in 30 seconds. The waistcoat is sold by the Life-saving Devices Syndicate Limited, Basildon House, Moorgate-street, London, E.C.

SCIENTIFIC TERMINOLOGY.

BY the same post we received the following communications:—

A correspondent in Worcestershire writes: "The great scientific detective, Craig Kennedy, who is making the heart of the British public palpitate weekly at the picture houses, says in his 'book of words,' the 'Exploits of Elaine,' when describing some scientific apparatus: 'The idea had been suggested to me by the cystoscope, which physicians use in order to look down one's throat.'"

A correspondent in Canada writes that he recently had three scalpels ground by a local cutler and got a bill for "three scalping knives."

TREATMENT OF FIBRINOUS BRONCHITIS.

To the Editor of THE LANCET.

SIR,—I wonder if any of your numerous readers could give me a hint as to the treatment of fibrinous bronchitis? I have at present under my care a case which has resisted all ordinary remedies and vaccine treatment; and I shall be greatly obliged if anyone will tell me of some remedy which they may have found successful in the treatment of these distressing cases. I am, Sir, yours faithfully,

March 30th, 1916. M.B.

THE HOFFMANN-LA ROCHE CHEMICAL WORKS, LIMITED.

THIS firm, with works at Idol-lane, London, E.C., ask us to state that the Home Office has now withdrawn the warning it issued in October, 1915, against commercial houses in this country trading with the firm of F. Hoffmann-La Roche and Co., of Basle, Switzerland, of which the London firm is a branch. It appears that the warning was issued under a misapprehension as to the enemy status of the Basle firm, which is entirely Swiss, and unconnected with either Germans or Austrians.

A Manifestation.—The author has neglected to supply us with any name and address, so that we are unable to return his or her manuscript.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, April 5th, 1916.

Date.	Barometer reduced to Sea Level and 32° F	Direction of Wind.	Rainfall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks
Mar. 30	30·194	W.	...	80	53	34	42	43	Overcast
,, 31	30·420	S.W.	...	67	54	43	45	47	Overcast
April 1	30·370	N.	...	85	55	42	42	45	Cloudy
,, 2	30·2·0	N.E.	...	99	61	39	45	47	Fine
,, 3	30 040	S.W	...	99	67	41	42	42	Foggy
,, 4	29 966	N.W.	...	90	53	42	44	46	Cloudy
,, 5	30 0 6	N.	...	92	52	40	40	43	Fine

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Thursday, April 13th.

DERMATOLOGY (Hon. Secretaries—A. M. H. Gray, J. H. R. McDonagh): at 5 P.M.

Mr. J. H. R. McDonagh: The Rationale and Practice of Chemo-Therapy.

N.B.—Fellows and Members of other Sections are invited to attend and to take part in the discussion.

Friday, April 14th.

ANÆSTHETICS (Hon. Secretaries—F. H. Shipway, Ashley S. Daly): at 8.30 P.M.

Annual General Meeting.—Election of Officers and Council for Session 1916–1917.

Paper:

Dr. M. S. Pembrey and Dr. F. H. Shipway: Observations on the Influence of Anæsthetics on the Body Temperature.

Demonstrations:

Dr. F. H. Shipway: Apparatus for the Administration of Warm Anæsthetic Vapours.

Dr. Harold Low: Apparatus for the Intratracheal Insufflation of Ether.

Dr. F. H. Shipway: Apparatus for the Intratracheal Insufflation of Ether.

Captain C. T. W. Hirsch: Modification of Waller's Chloroform Inhaler.

HUNTERIAN SOCIETY, 1, Wimpole-street, W.

WEDNESDAY.—9 P.M., Adjourned Annual Discussion on the Relationship of the Medical Profession to the State and the Community. Dr. H. J. Cardale, Dr. B. A. Richmond and others are expected to take part, and Dr. F. J. Smith will reply.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East.

TUESDAY AND THURSDAY—5 P.M., Oliver-Sharpey Lectures:—Dr. M. S. Pembrey: The Development of the Regulation of Temperature. (Lectures I. and II.)

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.

Course of Lectures on the Anatomy of the Human Body, for First-aid and Ambulance Students (open to all members of ambulance companies and first-aid classes):—

MONDAY, WEDNESDAY, AND FRIDAY.—6.30 P.M., Prof. A. Keith. 4 P.M. to 7 P.M., Exhibition of Anatomical Preparations and Specimens in the Theatre on lecture days, and between 10 A.M. and 5 P.M. in the Hall of the Museum on the following day.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye. Dr. Simson: Diseases of Women.

TUESDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Addison: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations. Dr. Simson: Diseases of Women.

THURSDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye.

FRIDAY.—10 A.M., Dr. Simson: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Addison: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis. Operations of the Throat, Nose, and Ear. Mr. B. Harman: Eye Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY.—Clinics:—10.30 A.M., Surgical Out-patients (Mr. H. Gillespie). 2.30 P.M., Medical Out-patients (Dr. T. R. Whipham); Gynæcological Out-patients (Dr. Banister). 3 P.M., Medical In-patients (Dr. R. M. Leslie).

TUESDAY.—2.30 P.M., Surgical Operations (Mr. Carson). Clinics:—Medical Out-patients (Dr. A. G. Auld); Surgical Out-patients (Mr. Howell Evans); Nose, Throat, and Ear Out-patients (Mr. C. H. Hayton). Radiography (Dr. Metcalfe). 3.30 P.M., Medical In-patients (Dr. A. J. Whiting).

WEDNESDAY.—Clinics:—2.30 P.M., Throat Operations (Mr. C. H. Hayton). Children Out-patients (Dr. T. R. Whipham); Eye Out-patients (Mr. R. P. Brooks); Skin Out-patients (Dr. H. W. Barber). 5.30 P.M., Eye Operations (Mr. R. P. Brooks).

THURSDAY.—2.30 P.M., Gynæcological Operations (Dr. A. H. Giles). Clinics:—Medical Out-patients (Dr. A. J. Whiting); Surgical Out-patients (Mr Carson); Radiography (Dr. Metcalfe). 3 P.M., Medical In-patients (Dr. R. M. Leslie).

FRIDAY.—2.30 P.M., Surgical Operations (Mr. Howell Evans). Clinics:—Medical Out-patients (Dr. A. G. Auld); Surgical Out-patients (Mr. H. Gillespie); Eye Out-patients (Mr. R. P. Brooks).

THE THROAT HOSPITAL, Golden square, W.

MONDAY.—5.15 P.M., Special Demonstration of Selected Cases.

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ABSTRACT OF

The Lumleian Lectures

ON

ACUTE POLIOMYELITIS.

Delivered before the Royal College of Physicians of London on March 30th and April 4th and 6th, 1916,

BY FREDERICK E. BATTEN, M.D. CAMB., F.R.C.P. LOND.,

PHYSICIAN, CHILDREN'S HOSPITAL, GREAT ORMOND-STREET, AND NATIONAL HOSPITAL FOR PARALYSED AND EPILEPTIC, QUEEN-SQUARE, W.C.

ACUTE poliomyelitis has, during the last decade, spread in an epidemic form over the face of the globe, and considerable advances have been made in our knowledge of the disease. It is true that previous to 1905 small epidemics had occurred, but it is only since that date that it has had its present wide prevalence. During the last six years the experimental investigations of Flexner and his co-workers at the Rockefeller Institute, of Levaditi at the Pasteur Institute, of Leiner and v. Wiesner in Austria, and Roemer in Marburg, have thrown much light on the nature of the disease. A wider knowledge of the clinical manifestations has been gained, and the investigation of acute cases has rendered the pathological process more clear. It is my purpose to put before you in these Lumleian lectures the epidemiological, experimental, and clinical observations, and some points with regard to the treatment of the acute stages of the disease.

It is during the last five years that the disease has been recognised by the public health authorities in England as a definite specific fever, and notification has been adopted. The British Islands have suffered comparatively little during the epidemic periods. Although much has been discovered with regard to the nature of poliomyelitis, it has not yet been possible to apply that knowledge to its prevention, and much investigation still remains to be done, not only in the experimental but also in the clinical and epidemiological fields. The similarity which the pathological changes have to those of rabies raised the hope that the precautions which have been so successful in dealing with that infection might be able to control poliomyelitis; but the disease in its spread bears such a likeness to that of meningococcal meningitis that this is hardly to be expected. It seems unlikely that any effectual remedy, other than prevention, will be found for a disease which is so fulminating in its attack, and so destructive in its effects on the central nervous system.

The first lecture will be devoted to the epidemiology and pathology, the second to the experimental, and the third to the clinical consideration of the subject. The names which have been used and suggested for the disease are numerous; but that of "acute poliomyelitis" has now come into such general clinical use, and is also used to describe the nature of the virus, that it is inadvisable to attempt to replace it. All that is required is that "poliomyelitis" shall be recognised as one of the acute specific fevers, having a tendency to affect any part of the central nervous system, and giving rise to a variety of symptoms dependent upon the portion affected.

EPIDEMIOLOGY.

The history of the early epidemics of poliomyelitis, and its spread through Sweden and Norway and America were dealt with, and the evidence accumulated by Wickman with regard to the spread of infection by means of carriers along the lines of communication, roads, railways, &c. Certain factors were common to all epidemics—seasonal relationship, age incidence, and mortality—which commonly amounted to 11–12 per cent.

There have been earlier epidemics in Great Britain, and a considerable spread of the disease took place in Cumberland in 1910. In 1911 numerous epidemics were recorded throughout England, notably in Devon and Cornwall and the Eastern Counties. These were investigated by Dr. R. J. Reece, but no definite conclusion has been arrived at as to the mode of spread of infection.

In September, 1911, the Local Government Board made the disease compulsorily notifiable in London, and in September, 1912, for the whole country. For the years 1912–13–14–15 some idea can be obtained of its distribution throughout the community by consulting a series of maps; these show that the disease is distributed in a very irregular manner. A marked prevalence can be noted in the counties of Lancashire, Cheshire, Stafford, and Warwick during the years 1912, 1913, and 1914, and with a sharp decline in 1915. Northampton, Bedford, and Bucks suffered severely in 1912, but remained fairly free after that date. Gloucester and East Sussex, on the other hand, had a high incidence in 1915, neither of these counties being severely affected in the previous years. The number of cases notified during the years 1912–13–14–15 were 823, 736, 500, and 408 respectively. The mortality lay between 13 per cent. and 16 per cent., and the incapacity, owing to permanent paralysis, was about 50 per cent.

During the year 1913 an epidemic of poliomyelitis occurred in Barrow-in-Furness which was investigated by Dr. H. A. MacEwen, who noted that it was restricted to young children. It is known that Barrow-in-Furness suffered a severe epidemic of poliomyelitis investigated by Dr. R. P. Garrow in 1910. So the disease when it occurred again in 1913 fell upon a locality in which the susceptibles had been picked out by the former epidemic, and the population, except for those who had come into existence since 1910, had a natural or an acquired immunity. It would seem that the susceptible material of a population is fairly soon exhausted.

The study of maps illustrating the distribution of cases in the London area points to the fact that certain districts seem to have an exceptional incidence of the disease, but here again, as in the distribution about England, there is a considerable irregularity. The charts prepared from the notified cases of poliomyelitis during the past four years, both in London and England, show that the disease has pursued the even tenor of its way with the usual seasonal incidence. There is no reason to believe that its prevalence has been greater or less than it was in years previous to notification.

PATHOLOGICAL ANATOMY.

Most observers of the present day regard the essential pathological change which occurs in acute poliomyelitis as an inflammation of the interstitial tissue of the central nervous system. This view has only been arrived at by the careful investigations of numerous observers in every stage of the disease. The leading points in the history of advance in this branch of the subject were dealt with. In 1905 Wickman examined a number of acute cases and showed that the process was not limited to the spinal cord, but occurred in disseminated form in the medulla, pons, cerebrum, cerebellum, and membranes. The process is mainly interstitial and of the infiltrative lymphocytic type. Wickman considers that within the nervous system the inflammation travels along the perivascular lymphatics; the perineural lymphatics probably carry the infection from the site of inoculation to the cord.

The lecturer showed, by a series of specimens from the brain, medulla, and spinal cord, that in addition to the perivascular infiltration there was considerable infiltration round the ganglion cells, and that these cells were destroyed by neurophagic cells, some of the ganglion cells being entirely replaced by these. The posterior root ganglia and the soft membranes of the cord shared in the infiltrative process. Sections of the peripheral nerves also showed infiltration, and in the later stages degeneration. The changes in the muscle were such that some fibres had undergone complete degeneration, whereas others were normal.

EXPERIMENTAL POLIOMYELITIS.

In 1909 Landsteiner and Popper succeeded in transmitting poliomyelitis to two monkeys, but they failed to propagate the experimental disease beyond the first generation. Flexner and Lewis overcame the difficulty of propagation by substituting the intracerebral for intraperitoneal method, and were the first to transmit the disease through a series of monkeys. They, Levaditi, and others showed that the virus would pass the porcelain filter, that it withstood the action of glycerine and prolonged drying.

In October, 1913, Flexner and Noguchi published the method by which they succeeded in cultivating the organism of poliomyelitis on a special medium. The micro-organism consists of globoid bodies measuring from 0·15 to 0·3 micron in diameter and arranged in pairs. They showed that the

micro-organism fulfilled the conditions hitherto demanded for the establishment of a causal relation between an external parasite and a specific disease. The micro-organism exists in the diseased organs; it is capable of reproducing on inoculation the experimental disease in monkeys, from which animals it can be recovered in pure culture. Besides these classical requirements the micro-organism withstands glycerination as does the ordinary virus of poliomyelitis. Flexner and Noguchi, in conjunction with Amoss, carried the strain through 20 subcultures and proved that the final culture was pathogenic to monkeys.

The observers Kling, Pettersson, and Wernstedt, in Sweden, had the opportunity of investigating an epidemic of poliomyelitis in 1911. They obtained washings from the nose, the mouth, the pharynx and upper air passages and small intestines of a number of patients: (1) dead of the disease; (2) living cases; (3) abortive cases; and (4) healthy persons in contact with the infected individuals. With these washings filtered through a Heims filter they succeeded in infecting monkeys, and they showed that a larger number of individuals in all the above groups carried the organism.

The transmission of poliomyelitis by means of dead objects and flies has been investigated by Josefson, and Neustaedter and Thro investigated the dust of a room in which a case of poliomyelitis had been nursed. They succeeded after many failures in producing poliomyelitis in monkeys. Rosenau in 1912 demonstrated that poliomyelitis could be transmitted from monkey to monkey by means of the bite of Stomoxys calcitrans (stable fly), and this observation was confirmed by Anderson and Frost. Clark, Fraser, and Amoss in 1914 conducted a further series of experiments with stomoxys which gave wholly negative results, and a second series conducted by Anderson and Frost were similarly negative. The whole of the experimental evidence is strongly against the communication of the disease to man by flies.

Flexner, Clark, and Amoss found that a strain of poliomyelitic virus propagated in monkeys for four years displayed during that time three distinct phases of virulence. At the outset the virulence was low; but by animal passage it quickly arose to its maximum, the maximum was maintained for about three years, and without known change in external conditions, a diminution set in and increased until at the expiration of a few months the degree of virulence about equalled that present at the beginning of the passage into the monkeys. By resorting to the original specimen from which the virus was obtained a highly virulent strain was again produced. It is clear that the frequent and long-continued passage through monkeys finally brings about a depression of virulence, whilst preservation in a state of latency for a period equally great exerts no depressing action. The cycle of changes in virulence is correlated with the wave-like fluctuations in epidemics of disease, which also consist of a rise, a temporary maximum and a fall in the number of cases produced.

The pathological change found in the experimental poliomyelitis in monkeys agrees with those and is similar to those in man. Kling, Pettersson, and Wernstedt, however, have described changes in their experiments on monkeys which have no counterpart in man, and for this reason Flexner, Clark, and Fraser are unwilling to accept these cases as the result of poliomyelitis.

POLIOMYELITIS IN ANIMALS.

Most observers have failed to transmit human poliomyelitis to animals other than the monkey and the ape. During epidemic periods, forms of paralysis have been noted in colts, horses, fowls, pigs, &c, but none of these paralyses have been proved to be due to poliomyelitis. Roemer in 1911 succeeded in transmitting a disease like poliomyelitis through a series of guinea-pigs; but monkeys were not susceptible to this disease. MacGowan describes poliomyelitis in sheep suffering from "loupin-ill," and the changes in the central nervous system were similar to those found in poliomyelitis. Flexner and Clark described paralysis in a dog simulating poliomyelitis. They were not, however, able to transmit the disease to other dogs. Marks was able to transmit poliomyelitis through a series of young rabbits. The animals suffered from no paralytic symptoms, and their cord showed no pathological change; but monkeys inoculated from their organs developed poliomyelitis, so that it is clear that the disease can be propagated by rabbits.

SERUM DIAGNOSIS.

It has been shown that the serum of patients and monkeys who have recovered from an attack of poliomyelitis has viricidal properties, and it is possible to test the serum for these. This is accomplished by taking a 5 per cent. emulsion of the spinal cord containing the active virus and mixing it with an equal quantity of the serum to be tested. The mixture is kept at room temperature for several hours; it is then injected intracerebrally into a normal monkey. A control monkey receives the same quantity of virus. The control monkey becomes infected, the other remains free. Anderson and Frost by this method found in six out of nine suspected cases of abortive poliomyelitis that the blood serum was viricidal against the virus of poliomyelitis. The serum injected into animals has no preventive or curative effect. The sera of animals which are immune to poliomyelitis, such as the horse, &c., has no viricidal power either *in vitro* or *vivo*.

Numerous observers have tried the fixation of a complement method, and all agree that the use of an extract of organs containing the virus as antigen does not permit the discovery of antibodies in the serum or the cerebro-spinal fluid.

CLINICAL FEATURES.

The clinical features of poliomyelitis may be most varied according to the part or parts of the nervous system affected. The grouping on an anatomical basis suggested by Wickman is that which is most helpful to the clinical description of the disease. The groups are as follows:—(1) The spinal form; (2) the bulbar, pontine and mid-brain form; (3) the cerebral form; (4) the cerebellar form; (5) the neuritic form; (6) the meningitic form; (7) the abortive form.

The spinal form is the common manifestation of the disease, but the clinical variations in this form are considerable and they are not always recognised as manifestations of poliomyelitis. The ascending type (sometimes called Landry), in which the progress of the disease is not uniform but becomes arrested for some days and then after an interval of 2–3 or more days again starts its upward course, is an uncommon manifestation of the disease.

The involvement of the thoracic and abdominal muscles with complete collapse of one lung is a rare symptom, but local paralysis of part of the abdominal muscles is somewhat more frequent. *Complete transverse* lesions of the spinal cord are not commonly recognised as poliomyelitis, but such occur and give rise on recovery to a spastic paraplegia. If the lesion is situated in the cervical region the clinical picture may be loss of power and atrophy of the muscles of the hands and arms, with a spastic condition of the lower limbs. Netter and Levaditi have shown by the serum test that the blood of a patient who had recovered from such an attack possesses the properties for neutralising the virus of poliomyelitis.

Paralysis of the neck muscles without affection of the bulb or shoulder muscles is an unusual manifestation, and such weakness of neck muscles makes it impossible for the patient to walk. Unilateral paralysis of the diaphragm occurs. Instances of affection of the cranial nerves and of ocular paralysis associated with blindness were recorded.

Among the rare manifestations in the *cerebral form* is that of athetosis. This occurred in a child in whom the left arm and left side of face showed athetotic movement, associated with flaccid paralysis of the left and partial paralysis of the right leg.

The *cerebellar form* is characterised by the acute onset of ataxia.

The *meningitic form* is one of the most interesting groups of poliomyelitis, and one which frequently leads to an error in diagnosis. The meningitis is indicated by the presence of lymphocytic cells in the cerebro-spinal fluid. Certain cases, however, manifest symptoms of meningitis without any change in the cerebro-spinal fluid. Some of these cases show on pathological examination characteristic poliomyelitic changes in the brain. Cases illustrative of the various types were given.

The *neuritic form* is one which many observers are not willing to accept as occurring in poliomyelitis. If the presence and persistence of pain are taken as the evidence of neuritis it may be asserted that there is no justification for the title, but cases are described after an acute onset in which there is symmetrical affection of the peripheral muscles of the limbs with loss of sensation over the extremities.

The *abortive form* has been described in the countries where large epidemics have occurred, but few cases are recognised as such in England, as the disease has never become widely spread in an epidemic form.

Relapses in poliomyelitis.—Reference was made to the so-called "jump" case of poliomyelitis in which the disease is not steadily progressive, but remains stationary for a day or two and then rapidly advances a further stage; arrest may again take place followed by further advance. Relapsing cases differ from the above in that the patient improves in the interval, and then after some weeks fresh symptoms develop which may again clear up, and then a further relapse may occur.

Second attacks of poliomyelitis are very rare. The literature contains some three or more instances of such, but none of them are very convincing, nor will they bear critical investigation.

Cerebro-spinal fluid in poliomyelitis.—The examination of the cerebro-spinal fluid in poliomyelitis has yielded variable results. In some the fluid has been normal, in others there has been an excess of albumin with a moderate increase of lymphocytes, in others again a very large increase of these cells has been noted. The condition of the cerebro-spinal fluid has varied not only with the time after the onset of symptoms at which the fluid was examined, but also with the nature of the case, the cases with the most marked meningeal symptoms tending to yield the largest cell count. Those who have had the opportunity of studying the cerebro-spinal fluid in the pre-paralytic stage have noticed a high percentage of polymorphonuclear cells, but in the large majority of cases seen in England, when the paralytic signs are well developed, the cell count is always lymphocytic and usually not very high.

The diagnostic value of the examination of the cerebro-spinal fluid was discussed. A high lymphocytic count is present in the cerebro-spinal fluid, in infection by tubercle, syphilis, mumps, measles, infective conditions of the sinuses and ear diseases, and also in a group of cases with acute meningeal symptoms described and investigated by Gordon. Monkeys inoculated with an emulsion from the spinal cord and from the parotid glands from these cases were unaffected, the presumption being that the cases were not cases of poliomyelitis. The nature of the virus to which the death of these children might be attributed must remain doubtful.

Intra-uterine poliomyelitis.—The occurrence of poliomyelitis in the fœtus during intra-uterine life is very difficult to prove. Not a few cases come under observation in which the paralysis is stated to have been observed immediately after birth, and when the child has come under observation the clinical features have been those of poliomyelitis. Flaccid paralysis of one arm due to birth injury of the roots of the brachial plexus is not rare, and Dr. Herbert Spencer has shown that hæmorrhage into the grey matter of the spinal cord in children dying at birth or soon after delivery is not uncommon. Two cases are reported in which the extensive flaccid paralysis of the muscles, not only of the arm but also of the legs, made it probable that the lesion was situated in the grey matter of the cord. The cases clinically resembled poliomyelitis. The condition was stated to have existed since birth, and in one of the cases pathological examination showed the changes in the spinal cord were those commonly found in long-standing cases of that disease.

Herpes zoster in relation to poliomyelitis.—It is well recognised that herpes occurs not only in association with a localised paralysis in the same individual, but is also liable to be present in an epidemic form at the same time of year. Many examples of herpes zoster on the forehead and face in association with ocular paralysis are on record; others of cervical herpes with facial paralysis; others of limb or trunk herpes with limb or abdominal paralysis. Several instances of such cases are given. Griffon examined the cerebro-spinal fluid in 11 cases of herpes, and found more or less marked lymphocytosis in all. In childhood the simultaneous occurrence of herpes and poliomyelitis is rare, and one case is quoted in a boy aged 7 years. Nearly all the recorded cases of paralysis associated with herpes are in adults and in many cases in elderly people, and it seems certain that many of these cannot be attributed to the virus of poliomyelitis.

Poliomyelitis and a generalised vesicular eruption.—A rash sometimes accompanies poliomyelitis formed of small vesicles widely distributed over the trunk and limbs. The vesicles resemble a small chicken-pock.

TREATMENT.

Recognising that poliomyelitis is an acute specific fever, having an incubation period of 4–12 days, the patient should be isolated. The infectivity is very slight, and in hospitals it is not necessary to place the patient in a separate ward, bed isolation being sufficient to prevent the chance of infection. As the virus is known to exist in the nasal and buccal mucous membrane it is essential to pay careful attention to the discharge therefrom.

Serum treatment.—It has been shown experimentally that the serum of patients who have recovered from an attack of poliomyelitis has the power to destroy the virus *in vitro*, but that this immune serum has no power to prevent the development of the disease when injected simultaneously or after the virus has been injected. Flexner and Amoss have shown that intraspinal injection of an immune serum is effective when introduced in the pre-paralytic stage in delaying and preventing poliomyelitic infection in a monkey. This method of intraspinal injection of immune serum has been used with success by Netter in cases of poliomyelitis of the acute ascending variety. The method is as follows. Some 20–30 c.c. of blood are obtained by veni-puncture from a patient who has passed through an attack of poliomyelitis (the length of time after the attack is not important, for it has been shown that the blood preserves its antitoxic properties for several years). The serum is separated by allowing the blood to clot and by centrifugalisation. Lumbar puncture is performed on the patient, and an amount of cerebro-spinal fluid removed corresponding to that of the serum which it is proposed to inject—usually about 10 c.c. The serum is now slowly injected, and the bed of the patient tilted so as to allow it to gravitate cerebralwards, the injection being repeated daily for three to four days.

There is little or no difficulty in carrying out the treatment. The difficulty is to obtain an old case of poliomyelitis who has already been tested and given a negative Wassermann and who is willing to give the necessary blood at the same time as a suitable case of acute poliomyelitis presents itself for treatment. It is useless to carry out the treatment when the disease has already become quiescent, and the most suitable cases are those (1) presenting symptoms of an ascending or progressive poliomyelitis; (2) presenting meningeal symptoms; (3) (if the diagnosis can be made) in the pre-paralytic stage.

Since animals are immune to poliomyelitic virus, the possibility of employing the sera of animals has been considered; but Flexner and Lewis found that the sera of horses and rabbits had no viricidal action, sheep's serum was slightly active and might be increased by injection of the virus, but the degree of activity is small.

Rest.—There can be no doubt that rest is the most important factor in treatment: the too early movement may in some cases re-start the disease which has become quiescent. A child with an acute attack of poliomyelitis should be kept absolutely at rest in bed for at least three weeks. The principles by which physiological rest can be secured to the muscles were considered, and the conclusion arrived at was that the paralysed muscles must be put into the "zero position," a position defined by Mackenzie as the position in which the individual muscle itself is relaxed and both its own action and that of its opponents prevented. Sherrington has shown that postural contraction which counteracts the effect of gravity can be maintained for long periods without fatigue, and a position which can be maintained without fatigue must be a position of rest.

Posture.—Various methods have been adopted for keeping the affected muscles at rest. Most of them tend to immobilise the patients for many months. It is important whilst keeping the completely paralysed muscles in a normal zero position, and at rest, to encourage other muscles, which may have been more or less affected, to resume their normal function. This is accomplished by re-education. The erect position and walking are the best forms of re-education for the trunk muscles. The method of re-educating the severely paralysed muscles is described below.

Splints.—The practical application of the above principles has been carried out by placing the paralysed limb or limbs

in celluloid splints, accurately fitted to the limb *as soon as it is possible* to make the cast after the onset of the disease; as the splint is to serve in most cases not only for keeping the muscles at rest, but also as a support in walking, it is important that the position of the limb should be such that progression is possible. These splints were first used by Calot, and introduced into this country by Gauvain,[1] who has used them in the treatment of tuberculous joints.

The splint is moulded on a plaster-of-Paris cast of the limb, and it is the taking of this cast that is important; for the limb must be in the zero position, or, in other words, the position normally assumed to counteract the effect of gravity when the patient is in the erect position. That position, so far as the legs are concerned, is one of slight flexion of the knees with the foot at a right angle, or an angle slightly greater than a right angle to the tibia.

The advantages of this form of splint are:—(1) That they maintain the muscles constantly in a position of rest, for they can be worn day and night; (2) they do not immobilise the patient, so that walking exercise can be carried out without the liability to produce deformity or stretching of the muscles; (3) they are easily removed and replaced, so that other methods of treatment can be carried out; (4) no special boots or shoes are required.

Re-education.—In re-educating a severely paralysed muscle it is important in the early stages to place the limb in such a position that the load on the muscle is at its minimum, and only a very small force is required to overcome the effects of gravity. A bath is an excellent place to practise the re-education of badly paralysed muscles; for the weight of the limb is supported and ranges of movement are possible which without the support of the water are impossible. Walking exercises and the erect position are the best forms of re-education for the trunk and abdominal muscles. When once the legs are splinted it is possible to get the patient into the erect position, and such allows of the physiological use of the back, trunk, and pelvic muscles Such walking exercises are carried out by the use of a walking machine which supports the patient both physically and morally; for it is important to give the patient the feeling of complete security.

Other methods of treatment.—Other methods of treatment are by massage, electricity, and baths. The surgical treatment is not dealt with here.

Results.—During the last four years these postural and re-educational lines of treatment have been carried out in all acute cases with the result that very few deformities have arisen. Such as have occurred were due to the contraction of the flexor group of muscles at the hip.

Conclusion.—The adoption of the practice of placing the limb in a position of rest at an early stage of the disease will not only facilitate recovery but prevent the greater proportion of deformities now seen as the result of poliomyelitis.

[1] THE LANCET, March 4th, 1911, p. 563, and March 22nd, 1913, p. 826.

TRAGIC DEATH OF A MEDICAL MAN.—Mr. James Hamilton, L.R.C.P., L.R.C.S.Edin., L.F.P.S.Glasg., of Hayle, Cornwall, died suddenly on April 2nd in his motor-car, while on his round visiting patients; he was in his forty-eighth year, and leaves a widow and child.

LEICESTER ROYAL INFIRMARY.—The 143rd annual report of the Leicester Royal Infirmary (for 1915) is a record of excellent work accomplished under great difficulties. Leicester being the headquarters of the 145th Northern General Hospital, the honorary staff of the Infirmary were gradually requisitioned as the military hospital continued to be enlarged, and war service also absorbed resident medical officers and nurses. The number of beds made available for wounded soldiers was 160, while 200 were in use by civil patients. Some 400 recruits rejected from military duty by reason of physical disabilities received surgical attention and were subsequently enlisted. In addition many recruits received attention in the special departments of the Infirmary. In the civil wards 3082 adults were admitted and 674 children, as compared with 3264 adults and 657 children respectively in the previous year. In the military ward 692 patients were treated. In the out-patient department there were 4352 new cases and 10,004 old cases. Unfortunately, the expenditure shows an increase of £3240 on the previous year, the total for 1915 being £28,821.

A NOTE ON THE IMPORTANCE OF AUSCULTATION IN THE DIAGNOSIS OF THE VASCULAR INJURIES ACCOMPANYING GUNSHOT WOUNDS.

BY SURGEON-GENERAL SIR GEORGE MAKINS, K.C.M.G., C.B., F.R.C.S. ENG.,
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WELL-RECOGNISED and characteristic as are the murmurs produced by the existence of traumatic openings in the walls of the blood-vessels, yet the routine employment of the stethoscope for their detection seems hardly so generally adopted as should be the case. The importance of this method of examination is obvious in any class of wound, but it is especially valuable in the case of the multiple wounds inflicted by the various forms of fragments derived from the bursting of high-explosive shells and bombs. In these injuries one wound amongst a dozen or more superficial lesions may pass deeply into the body and cause a vascular injury, the existence of which may be readily overlooked by ordinary methods of examination.

A few examples illustrative of the value of the method may be opportune and of some utility.

(*a*) In a patient admitted with a compound fracture of the leg, the absence of pulsation in the posterior tibial artery behind the inner malleolus and in the dorsal artery of the foot indicated that both the anterior and the posterior tibial arteries had been divided. An exploration confirmed this assumption, and both vessels were ligatured. The further progress of the case was not satisfactory, and a rise of temperature, accompanied by fresh swelling of the calf, suggested that an extension of infection from the primary wound cavity was taking place. Auscultation of the limb revealed the presence of a loud systolic bruit over the course of the peroneal artery, and this vessel was cut down upon and ligatured above and below the wounded spot.

(*b*) A patient who had sustained multiple bomb wounds of the calf, after a short stay in France was transferred to England for further treatment. After a period of some months the man was passed again as fit for active service and returned to his regiment. Thence he was sent to hospital in consequence of swelling of his leg. Auscultation, probably employed for the first time since the injury was received, revealed the presence of a loud "machinery" murmur due to the existence of an unrecognised arterio-venous communication.

(*c*) A man received a wound from a fragment of shell which entering over the spine of the right scapula was retained in the body. On examination the fact that blood had been expectorated and that dullness existed at the right base suggested that a hæmothorax had developed. On examination of the chest a loud double murmur was audible over the entire præcordium, and this was conveyed to the left base. This murmur was assumed by the first observer to be cardiac in origin, but on further examination, a typical "machinery murmur" was detected below the right clavicle and an arterio-venous communication between the innominate vessels was diagnosed. The death of the patient from violent hæmoptysis the same night allowed this diagnosis to be verified, as also the absence of any valvular cardiac lesion.

These three instances serve to emphasise the value of this method of physical examination and to impress the fact that in any case of swelling of a limb in connexion with a gunshot wound the stethoscope affords a ready and certain means of establishing a diagnosis. Further, observation of the point at which the bruit is loudest and highest pitched will serve to localise the exact position of the lesion. The method is far more reliable than the uncertain practice of examining for the state of the distal pulse, for this is obliterated only if the vessel has been completely severed, or in the rarer instances in which large masses of hard clot exist to compress it, while diminution of size and force is more likely to be due to moderate pressure from without than to the existence of a lateral wound in the wall of the artery.

The third case (*c*) raises another question of some importance; although the local murmur could not have been overlooked during the process of examination of the chest to determine the presence of blood in the right pleura, yet the murmur was first detected in the cardiac region and thought by the observer to originate in the heart. Now,

the examination of a large series of arterial wounds has shown that in a very considerable proportion of the cases the local murmur, whether systolic if purely arterial in origin, or of the "machinery type" in arterio-venous lesions, is conducted to the heart. Further, that such bruits, although temporary, may persist for several weeks. The method of conduction would seem to vary according to the position of the vascular injury and the distance of the local lesion from the heart. In the case of injuries of an arterio-venous nature to the vessels of the axilla and neck, the murmur appears to be conducted by the whole mass of the tissues of the thoracic wall, and this view is supported by the observation that the normal heart sounds can readily be distinguished by the continuous roar audible over the whole cardiac area, the continuous roar preventing the discrimination of any abnormality in the systolic or diastolic periods. I have not met with any instance in which a pure arterial murmur in connexion with a wound of the vessels of the arm or forearm was audible in the heart, but I have noticed it in a carotid aneurysm, and in the case of wounds of the femoral vessels the condition is comparatively frequent.

When the murmur is conducted upwards from the lower extremity it appears to be conveyed by the column of blood in the vessels. In the arterio-venous injuries this is not surprising because the roar of the continuous murmur is always transmitted the more widely in a central direction. When, however, the bruit is due to a purely arterial lesion the circumstance is less likely to have been suspected, because in the majority of instances the pure systolic bruit is more freely transmitted along the limb in the peripheral direction. In spite of this fact, however, a systolic bruit, even not of a very loud character, may often be readily audible at the cardiac apex. The pure systolic murmurs are heard at the apex alone, but in one case of arterio-venous aneurysm of the thigh the double murmur was conveyed also to the base of the heart.

It may reasonably be asked why these transmitted murmurs are only of temporary persistence? The fact seems explicable on the ground that the existence of a gap in the wall of a large vessel gives rise to a very considerable disturbance in the heart's action. A certain degree of dilatation of the organ nearly always develops rapidly, the heart's apex reaching the nipple line or extending beyond it; its action is rapid; and some disturbance of the relative duration of the periods of systole and diastole occurs, the latter phase being somewhat prolonged. This disturbance tends to settle down when the patient is kept at rest in the recumbent position, and with its disappearance the transmitted murmurs also become inaudible. The cardiac upset is probably to be explained by the sudden alteration in the force required for the maintenance of the general circulation under altered conditions, and the view that an increased burden is placed upon the organ, even when a great vessel is only encroached upon to the extent of a portion of the contained blood needing to be circulated in a cavity of moderate size in communication with the lumen, appears to be supported by the fact that the peripheral blood pressure of the limb beyond the lesion remains persistently below the normal. Examination of a number of limbs in which such lesions existed has shown a difference of some 20 mm. of pressure measured by the sphygmomanometer, in fact a difference amounting to that which follows complete obliteration of the lumen by ligature of the vessel.

I have dwelt upon this question of the cardiac bruits, not because the presence of a conducted murmur can be of general use in diagnosis, in view of the fact that such an occurrence is not a necessary accompaniment of an arterial lesion. Still, the detection of an apical systolic murmur in a young healthy subject with an injury to the thigh might draw attention to the fact that a grave arterial lesion was present in the limb, and lead to its detection when the absence of local pulsation, together with the presence of free pulsation of the peripheral vessels, had led to the question of a serious vascular injury being placed aside.

MEDICAL MAGISTRATE FOR TORQUAY.—Mr. George Mitchell Winter, L.R.C.P. Lond., M.R.C.S. Eng., D.P.H. Cantab., the deputy mayor of Torquay, has been placed on the commission of the peace for that borough.

SHOCK[1] AND THE SOLDIER.

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[*Note.*—Although I am wholly responsible for this article it is published with the knowledge and consent of Major R. G. Rows, R.A.M.C. I have to thank Mr. T. H. Pear and Mr. E. Gleaves for many suggestions and criticisms.—G. E. S.]

IT is generally admitted that never before in the whole history of war have the arrangements for the welfare of the soldiers been so well organised and on the whole so efficiently administered as those of our medical corps in the present war. Perusal of foreign medical journals makes it abundantly clear that the other combatants, not only our Allies, but also our enemies, have been closely studying all that we have been doing in this respect, and have not hesitated to benefit from our experience and to adopt many of our methods. It seems to me that we might follow their example much more than we have been doing, and in certain departments of medical work learn from them, or rather add their experiences to our own, in coming to a decision as to the best way of dealing with our own difficulties.

Among these the manifold problems relating to soldiers suffering from what may be designated by the vague and non-committal term "shock" (see footnote) are urgently calling for full consideration. These issues are of far-reaching importance and their solution involves matters of enormous difficulty. They concern not only the welfare of the individual patient, but also the maintenance of the efficiency of the combatant forces. In our system of selecting recruits the man with a varicocele or slight hernia is rejected, even though the greatest risk which accepting him would entail is the possibility that he himself might fail in an emergency. But no measures are taken to exclude the mental weakling, whose failure might lead to infinitely graver consequences, not merely to himself but to the whole of his unit. Even when the reality of such risks has been practically demonstrated by nervous breakdown, such men on recovery are still liable to be sent back to the firing line, in spite of what experience has now proved to be the certain knowledge that they will be useless as combatants, and will almost certainly succumb at the first strain.

But grave as these risks are, and urgently as they are crying out for remedial measures, there are other problems of this kind to be solved which will have a more profound and far-reaching influence upon the social—and, I may add, also the financial—welfare of the whole nation after the war.

There is no class of patients in the military hospitals concerning whom there is so much divergence of opinion as these, not merely as regards the methods of diagnosis and the mode of treatment that should be adopted, but also with reference to the wider questions as to what ought to be done with them after their discharge from hospital. This matter, therefore, is pre-eminently one concerning which it is desirable to obtain the reasoned views of competent and experienced men, irrespective of the side upon which they are serving.

Everyone who has had any dealings with the patients in the military hospitals scattered throughout this country must admit that much more might be done for patients suffering from some of the protean manifestations of "shock" than is being attempted at present. The general military hospitals contain scores of the milder shock cases, with which the medical officers have neither the time, nor, in many cases, the special knowledge, to deal. Such patients may recover of themselves without any attention, but a large number of them tend to get worse, and if they are left without attention their symptoms are apt to become stereotyped into definite delusions and hallucinations. Moreover, in a general hospital such men may become a constant source of disturbance and annoyance to other patients and to the nurses. One of the symptoms of their illness is a morbid irritability—they become upset and sometimes take offence at the merest trifles[2]—and this leads to trouble with patients, nurses,

[1] I am fully aware of the inadequacy and inappropriateness of this term, but the plain English word is less likely to give rise to misunderstanding or to involve me in the business of explaining terminological inexactitudes than the use of more technical language would entail.

[2] Major Rows: Mental Conditions following Strain and Nerve Shock, Brit. Med. Jour., March 25th, 1916, p. 441.

and the medical officers responsible for discipline. But if special consideration is shown them by the nurses the other patients are apt to misunderstand it, and even complain of favouritism. In other words, when mixed with wound cases in a general hospital, these nervous patients are apt to be regarded as a nuisance—which is bad for them and for the proper working of the hospital. Another consideration, also, is that the subjection of such men to the irksome regulations of military discipline, and the usual penalties for infringing them, is so potent a factor in producing disturbance as often to be quite fatal to any hope of amelioration. In a special hospital the wind can be tempered to the shorn lamb.

How is this situation to be remedied? In the other combatant countries, to judge from the medical journals, ampler provision has been made for dealing with this problem than has been done here.[3] The chief object of this communication is to set forth the views of some of those who have had to meet the infinitely vaster question of coping with the situation as it has presented itself to the medical corps in Germany and France, and incidentally, in the light of this knowledge, to urge that further efforts should be made in this country to deal with a problem which even here, where its magnitude is less, is one of great complexity and difficulty, the proper solution of which is becoming more urgent every week.

The men who are best equipped, both by their special knowledge and experience, as well as their present responsibilities, to deal with the matter, are for the most part much too busy dealing with the immediate practical issues to find time to consider or write about the wider questions with which I propose to deal here.

During last summer vacation I was allowed to take some small part in the work at the Military Hospital at Maghull, of which Major R. G. Rows has given a brief sketch[4] in the *British Medical Journal*. Living in the hospital with six officers who were devoting the whole of their time and energies to the diagnosis and treatment of soldiers suffering, for the most part, from mild forms of mental disturbance, even a few months of such intensive study gives one a very clear insight into the complexities and the enormous difficulty of the problems that have to be solved.

Nothing could be better calculated than such an experience to impress upon one the danger of publicly expressing opinions on the thorny questions of treatment, and the risks to which those who "rush in where wise men fear to tread" render themselves liable. Some explanation therefore is due at the outset for my venturing to break away from the attitude of discretion. For even the general consideration that questions of far-reaching importance are crying out for full discussion at the present moment is hardly a sufficient reason for a tyro to attempt to force the consideration of them upon the attention of the authorities and the medical profession.

On returning to university work at the beginning of the winter session, with the assistance of my colleague, Mr. T. H. Pear, I began to study the foreign medical journals that were available, for the purpose of comparing our short experience of these mental cases with that of the French and German medical officers. At the same time, mainly in response to numerous requests for information as to the nature of the work being carried on at Maghull, I was brought into communication, directly or indirectly, with medical officers working both in general and special hospitals in all parts of the country and abroad. This opened my eyes not only to the fact that there were considerable numbers of milder cases of "shock" scattered about in the general hospitals, but also that many medical officers, faced with the problem of treating such ailments, were anxious to learn something about their diagnosis and treatment, of which they frankly confessed themselves profoundly ignorant.[5] I have repeatedly been asked for enlightenment by general practitioners, suddenly called upon to deal with these specialised problems; and when they have been referred to authoritative statements,[6] it is customary for them to reply that they have neither the time nor the energy for the task of trying to understand the discussion of complex mental phenomena. It was the consciousness that a mere "outsider" like the writer might perhaps be able to draw a crude sketch more apt to appeal to such men than the statements of a specialist would be—even though he speak with more authority—which finally overcame my reluctance to undertake a task which so readily lends itself to misunderstanding.

Additional reasons for writing were, firstly, to call attention to certain statements in foreign medical journals, and, secondly, incidentally to raise for consideration some far-reaching general problems arising out of the question of these mentally afflicted soldiers. Without strong incentives such as these I should not have felt justified in attempting this task.

In coming to this decision I was also influenced by the remarkable position taken up by certain neurologists at the informal discussion of these cases of shock, which took place in London last November, under the auspices of the Medical Research Committee. One speaker made the remark that many of the patients suffering from shock "gave no history that threw any light upon their present condition," as though he expected that such men knew the causes of their illness, and would, in the course of a few minutes' chat, unveil the innermost secrets of their lives as readily and frankly as they would give the information that they had had measles.

The Importance of Diagnosis.

In the first interview with one of these patients, in the course of which the physician endeavours to obtain the details of the history of the trouble and makes the physical examination, it happens more often than not that he is unable to extract anything whatever that has any direct bearing upon the real causes of the illness. Even though the physician spends an hour or two in this preliminary cross-examination, in many cases no light is shed upon the patient's real history. In fact, many such prolonged inquiries may be made before any relevant information is obtained, and even then often the truth begins to emerge only after the patient's dreams have been obtained, either from his account of them or from inquiries as to the meaning of phrases shouted out during sleep.

In respect of such cases one often hears the comment made that the dreams are merely memories of incidents at the front. But if the trouble is taken to get a detailed record of dreams, in which every incident, however trivial and absurd it may appear, is noted, it will be discovered that in many cases the experiences at the front are blended with some episodes utterly alien to the war. If cross-examination of these incidents be conducted with patient persistence and discretion—and this is the kind of inquiry that does not demand any expert knowledge,[7] but simply common sense, discreet sympathy, and tact—it will very frequently lead up to some event in the patient's past history, the revivified emotions associated with which the war incidents have served to awaken, by stirring up similar emotions. By this simple process, if continued patiently day by day *by a physician who is striving to look at events from the patient's point of view*, the real reasons for the continuance of the shock symptoms are almost sure to be revealed. Without these means, and without such prolonged individual attention, the real nature of most of these cases is not likely to be discovered, and unless the causes are revealed the treatment cannot be other than empirical and fortuitous. I have repeatedly heard the argument that it is altogether unnecessary to attempt to diagnose such cases, and that isolation is the appropriate treatment for them, because Private X or Sergeant Y was so treated and made a perfect recovery. One might with equal cogency, or the lack of it, argue that it is unnecessary to diagnose a suppurating appendix as the cause of a case of peritonitis, because one has known of patients A and B who recovered after being treated with opium and the

[3] The reports published in the special war numbers of the *Revue Neurologique* (and especially Nos. 23, 24, November and December, 1915) bear ample testimony to the magnificent work being done by the French in this direction. Not only has special provision been made in each military district for dealing with neurological and mental cases, but also admirable reports upon the work are being published, and those responsible for the care of such patients have been afforded many opportunities for discussing their difficulties and learning one from the other.

[4] Op. cit., supra.

[5] It is a remarkable fact that Dr. Bernard Hart's excellent little book, "The Psychology of Insanity," which has had such a large circulation among the laity, seems to be almost unknown to the medical profession.

[6] Such, for example, as Déjerine and Gauckler's eminently sane and wise treatise, "The Psychoneuroses and Their Treatment by Psychotherapy," (Smith Ely Jelliffe's translation, second, English edition, 1913).

[7] Nor, contrary to the opinion expressed in a leading article in THE LANCET of March 18th (p. 627), any special vocabulary.

application of linseed-meal poultices. But just as no modern surgeon would regard the success of such individual cases as any excuse for not diagnosing and operating upon a suppurating appendix, so also the physician is not justified in arguing that correct diagnosis and appropriate treatment are unnecessary in cases of nerve shock.

But the question is constantly being asked, "How do you know when the *true* cause is discovered?" It is recognised by means precisely analogous to those by which a case of peritonitis is diagnosed to be the result of a suppurating appendix and not of pyosalpinx or any other lesion. The causal relationship between the symptoms and the history is, as a rule, so clear and indubitable that no one who has thoroughly investigated even a single case of "shock" can have the slightest doubt about the etiological nexus.

The Development of the Symptoms.

At the time when these notes were first drafted (November, 1915) hardly anything had been published in our medical journals on the subject of shock; and my aim was to compile a summary of the large series of most instructive reports that had appeared in the French and German journals. Since then, however, several important contributions to the discussion of this matter have been published in our journals. But though these articles simplify my task they do not affect the need for such a statement as I propose to make here.

In his vivid and sympathetic account of the phases through which officers pass when becoming neurasthenic, Dr. David Forsyth[8] called attention to the difficulties encountered in the past in defining "the nervous effects of intense emotional strain involving the risk of death," and how that after 20 years of discussion Bailey hit upon a means of escape from the clinician's dilemma by defining some of the cases as "mixtures of hysteria and neurasthenia."

Now, the fact does not seem to have been sufficiently emphasised that the terms "hysteria," "neurasthenia," "hypochondria," "mania," and "melancholia" are essentially labels given to groups of symptoms after they have become more or less stereotyped and systematised by each individual patient. In soldiers invalided from the front the physician has to deal, at any rate for the most part, with acute cases in which this process of systematisation has not gone very far. By labelling the outstanding symptoms "hysteria," "neurasthenia," "mania," or any of the rest of the terminological battery, there is a grave danger of overlooking the essential identity of the fundamental causes and nature of the trouble to be dealt with.

The many-sided manifestations of "shock" are in large measure determined by the inherited nature of each individual patient, but probably also, to an even greater degree, by his previous history and experience. In a not inconsiderable number of cases, however, the intensity and horror of the trauma are sufficient to explain the causation and to determine the form of the mental disturbance. As the culmination of months of mental strain and emotional stress, some terrifying experience indelibly imprints itself on the patient's mind and forces him to continue, day and night for weeks together, to see again and live through the awful moments; his attention remains wholly concentrated upon this experience, and he pays little or no attention to what goes on around him. If left to himself he will act in the way of all mankind and endeavour to interpret his feelings. Thus, if he continues to see visions of the scenes at the front, or to hear the sounds of bursting shells or the cries of his stricken comrades, he will explain these impressions to himself in accordance with his own experience and training. In other words, he will rationalise and systematise his new sensations until they become definite hallucinations and delusions, the precise form of which will be determined by the individual's previous history—i.e., by the way in which his accumulated knowledge and experience enable him to explain to himself and to interpret his new feelings. It is obvious that if such a patient comes into the hands of a physician before this process of rationalisation and systematisation has become established, the medical officer should be able to meet the patient's difficulties and help him correctly to interpret his unusual experiences. In this way the stereotyping of his erroneous interpretations—i.e., the development of systematised delusions or hallucinations—can be prevented.

[8] THE LANCET, Dec. 25th, 1915, p. 1399.

The Influence of the Individual's Life-history.

Even in such cases, where the culminating incident at the front has both started the trouble and determined its form, it is impossible wholly to exclude the influence of the individual's experience and life-history.[9] For in the procedure of rationalisation these are the sole sources of the knowledge made use of in this process, and therefore are mainly responsible for shaping his interpretations of his new experiences. Even before this stage is reached incidents in his past life, the memories of which are charged with a strong emotional tone, will influence the earlier after-effects of the terrifying experience at the front. Thus even in what seem at first sight to be straightforward cases of mental disturbance due directly, say, to shell concussion and the emotions associated with it, there is usually a definite link with the patient's previous experience. In most cases, however, this plays a much more obtrusive rôle. Let me cite a case in illustration of this, and I shall choose one to illustrate another point in addition—viz., that such troubles may develop without any shell concussion.[10]

A man, who had only recently been an inmate of a sanatorium, volunteered for military service at the outbreak of the war. After being at the front for about three months, during a most trying period of the campaign, he was sent to England as a case of neurasthenia. From his case-sheet little could be learnt except that he was subject to "dazed conditions." When seen in hospital he was suffering badly from insomnia; and the little sleep which came to him was constantly preceded by visions of two of his comrades who had been terribly lacerated alongside him. These hallucinations always seemed quite real to him at the time he experienced them, and aroused in him an intense fear that he was mad. It is important to notice that he was not subject to hallucinations during the day-time. Now, although these pre-sleeping experiences are of fairly common occurrence in the case of many normal individuals, they were novel to him, and they had begun to disturb him more and more seriously. He also had terrifying dreams, which regularly began with episodes at the front, and, without the interruption of awaking, changed as regularly into representations of sexual experiences, ending with seminal emissions. This latter fact, added to the bewilderment caused by his pre-sleeping visions, made him believe that he was insane, because it revivified a terror experienced when a boy from reading trashy literature.[11] These writings had convinced him, at the time, that he was going mad, because he had spermatorrhœa. The recurrence of these emissions, and of all that they implied to him, at the very time when he was suffering from pre-sleeping or "hypnogogic" hallucinations, had served to convince him that he was insane. He was in this condition when he came under treatment. It was first explained to him that hypnogogic experiences occur frequently in perfectly normal individuals. Examples taken from the writings of psychologists who have studied such phenomena, both in themselves and others, were used to illustrate this fact. Further, it was pointed out to him that his hallucinations did not occur except at the moment of falling asleep. The result of this talk was that although the images still presented themselves at night he was no longer afraid of them. By explaining to him in an elementary way the structure and functions of the

[9] The importance of the patient's past history has been stressed by Lieutenant-Colonel C. S. Myers in THE LANCET of March 18th, p. 608.

[10] In Dr. Forsyth's article, to which I have already referred, an admirable account has been given of the development of a condition when the patient's mental balance becomes liable to be upset by some trifling episode.

[11] In a very considerable proportion of these cases the literature which the patients had been studying, especially during adolescence, played a very obtrusive part in determining their present troubles. This applies not merely to pseudo-physiological works, but also to certain classes of books dealing with social and political problems. To me the extent of the influence of such writings has been a most amazing revelation. This subject is well treated in Stanley Hall's "Adolescence," vol. I., pp. 456-463.

It is very difficult to understand Dr. Forsyth's attitude (op. cit., p. 1400) in ascribing "the neurasthenia of civil practice" as "known to be the specific result of excessive onanism." In the cases that I have personally examined, or read about, it has been impossible to lay any of the blame on onanistic practices: but the terror which false teaching has inculcated regarding the effects of such practices has been a most lethal weapon in disturbing the equilibrium of many patients. The fact that much of this literature is the work of misguided cranks, who intend (or, at any rate, make the pretence of doing so) their writings to be warnings about the dangers of certain practices, makes them more potent instruments of destruction. Their very teaching is largely responsible for creating the dangers against which they pretend they are warning their victims. It is deplorable that nothing is done to combat the bad influence of this "literature."

Dr C. A. Mercier's characteristic protest (THE LANCET, Jan. 15th, 1916, p 154) against Dr. Forsyth's statement is no doubt quite justified; though, of course, in using it to attack the whole theory of the rational treatment of incipient mental disturbance he allows his facile pen to run away with him.

sexual organs, it was easily brought home to him that there was no truth in the false and pernicious literature he had been reading, but that his spermatorrhœa was a not unnatural incident in a man situated as he was. By discussing with him and explaining lucidly the nature of his disturbance, his condition was rapidly improved. He exclaimed, "Why wasn't I taught this when I was a lad; for then I should have been spared all this trouble." It was necessary for his medical attendant daily to talk to him and clear away his difficulties. But he relapsed again as the result of a quite trivial incident. Having leave out for an afternoon he went to the railway station to say farewell to his wife, who had been visiting him; she was taken ill at the station, and he accompanied her home; the result was that he was some hours late in returning to hospital, and was punished for it. The punishment of being confined to barracks is regarded by most soldiers as a purely military offence to which no moral stigma is attached. But in this man's case it produced the most profound depression and he talked of suicide. It was established afterwards that this attitude was due entirely to the exaggerated importance which in his condition of nervous instability he had attached to an early incident. It appears that when he was a child he was greatly upset by the fact of his father being sent to gaol. Because of this trouble the present trivial military offence assumed a special gravity in his eyes. He complained that he was tainted by his father. The nonsense written by some popular writers on heredity had led him to imagine that his present "criming" was due to the inheritance of his father's failing. This misconception being removed, the patient's condition improved immensely.

In such cases the full and frank discussion of disturbing factors such as this, and the clear exposition of the common-sense point of view, is immediately efficacious, and if persisted in regularly and conscientiously brings about a gradual and often rapid improvement.

This case illustrates how the continuance of the trouble may be due to incidents which in themselves might appear to an "outsider" to be altogether trivial and to have no connexion with the causation of the present illness. If full and patient inquiry is not made into such causes of disturbance, no treatment is likely to be efficacious: yet when discovered and explained, the patient's relief at once becomes apparent. This is not mere empty theory; but the common-sense point of view, of the truth of which every man's experience of the causes of his own moods should convince him. But in a still larger proportion of cases the necessity for unveiling the previous history of the patient becomes more insistent, because certain incidents in his past experience are responsible, not only for the persistence of his trouble, but also for determining the form his illness takes.

In many of the cases in which the shock-effects persist—and, of course, I am referring to those patients whose trauma is psychical—one important reason seems to be that the physiological expressions of the emotion excited at the time of the trauma—which expressions persist for a long time afterwards[12]—have served to link on to the present trouble other incidents in the individual's past history which were associated with similar emotional effects.

One of the chief difficulties in obtaining a general consensus of medical opinion in support of some definite scheme for dealing with these difficult problems is due to the fact that so many physicians refuse to admit the reality of the facts just stated. They claim that incidents which happened to a patient years ago can have no direct bearing on his present illness. It is inconceivable that such claims can be persisted in by any physician who has really investigated even a single one of these shock cases. The inquiry into the meaning of the symptoms links up the present condition with the past history in so definite and conclusive a manner that it is altogether incredible that anyone who has considered in detail the etiology of a case of shock could have any doubt whatever on the matter.

But in considering the symptomatology of these mental cases it must be obvious to everyone who gives the matter any consideration whatsoever that the manifestation of a severe psychical shock must necessarily be determined in large measure by the nature of the mind upon which the injury falls. The mental equipment of each individual consists largely of his personal experience, as interpreted and built up by himself into a system. When a man is subjected to a psychical shock one "structure" which is damaged is this systematised complex of the incidents of his previous history and the feelings and emotions associated with them, as they have been rationalised by him for his own satisfaction. It is idle to pretend, therefore, that the story of the patient's past experience can be left out of account, for it is the mind which is damaged, and the manifestations of the injury will obviously depend largely upon the individual's "mental make-up." There is still a widespread tendency (even in works on insanity and in the writings of psychologists) to speak of "hallucinations," "delusions," &c., as if they were diseases in themselves. A patient is described as "suffering from delusions" without any attempt being made to investigate the nature and genesis of these abnormal phenomena. But the formation of a delusion is an extremely complex process, usually occupying some time. Its basis is frequently a misunderstanding or set of misunderstandings which could be cleared away if detected early enough. The superficiality of speaking of a patient as merely "suffering from delusions" is clearly illustrated by Dr. H. Devine's memoir on "The Biological Significance of Delusions."[13]

But what is even more disastrous is to brand certain patients as "suicidal," and then to consign them to a single room without any real inquiry as to the meaning of this condition.[14] One of the reasons for this superficiality in treatment is the opinion (based upon a half-truth) that it makes the patient worse to talk about his hallucinations, and that one must rather try "to make him forget them." That it makes him worse to talk about them is sometimes true, but in these cases the disturbance so produced is usually temporary. On the other hand, many patients feel much better for having unburdened themselves in this manner.

The Relation of Correct Diagnosis to Treatment.

To suppose that without understanding the nature of and the specific reasons for the development of a hallucination one can "make the patient forget" his interpretation of a real experience, which has appealed to him day and night for weeks, or banish a delusion which is gradually becoming systematised and rationalised—i.e., intimately interwoven into the tissues of the whole of his experience—is an assumption which has no foundation in fact.

The point cannot be too much emphasised that many of these patients are quite sane, if conduct be regarded as the criterion of sanity; but they are growing afraid of the appearance of these abnormal phenomena, and take them for signs of incipient—or, more usually, perhaps of established—insanity. Two considerations arise from this—viz.: 1. Many of the troubles with which such patients are afflicted are not in any way indicative of insanity, though the patient thinks they are—e.g., the appearance of pre-sleeping hallucinations to a man who had always been accustomed, before the war, to fall asleep without such intense mental images Telling a patient who is worrying about such hallucinations that they often occur to quite normal people, explaining to him the way in which they may be supposed to develop, and accounting for his own particular experience, may be sufficient to clear away most of his mental trouble. 2. While treatment by isolation has obvious advantages in certain cases, in the particular group of patients which I am now discussing it is often dangerous, for it affords them every chance to brood upon and cultivate their initially mild derangements. As the presence of such mental phenomena is often confided to the physician only after great hesitation, and as such worrying experiences are common in cases of insomnia and other disorders, which, though troublesome, do not appear to be grave, it is possible that isolation may have serious effects in many cases in which its net results *seem to be* that the patient is merely no better.

The Real Trauma is Psychical, not Physical.

The majority of cases with which this communication is concerned is made up of men who, after spending months in the firing line exposed to every kind of discomfort and anxiety which modern trench warfare imposes, and having their deepest emotions repeatedly stirred up by the death of

[12] Mr. Pear tells me that according to a modern view of the emotions (that of Professor Külpe) they cannot be imaged, but are actually *reinstated* when the experience originally connected with them is recalled in memory. Whether this be generally true or not, it is obvious that thinking about a past experience which has been connected with a vivid emotion is frequently sufficient to bring about the emotion, even if in a mild form; and clearly the experiences which these soldiers recall in memory have frequently aroused emotions considerably more intense than those which occur to the average civilian.

[13] Journal of Mental Science, lxii., p. 256.

[14] Further, it is often not quite clear, when the word "suicidal" is used, whether it is intended to mean that the patient has contemplated or spoken of suicide, or has been known actually to have attempted to take his life.

comrades and the repeated reminders of their own peril, were struck down by "shell concussion." Gaupp defines this term as the general injury of the soldier in whose vicinity a shell has burst without wounding him. All direct bodily wounds produced by parts of a shell, or by objects thrown about by the explosion, are excluded from consideration in this connexion, although, of course, not infrequently the victims of "shock" are physically wounded also.

It is beyond the scope of this article to discuss to what extent slight injuries of the nervous system, or, in fact, of any part of the body, may be responsible for suggesting the form assumed by the so-called "functional" troubles with which I propose to deal. There is evidence to suggest [1] that trivial and transitory physical damage, as well as incidents in the individual's personal experience that were associated with powerful emotions, even many years previously, play the chief part in determining the form his present mental disturbance assumes. But in other cases the culminating experience at the front was of so terrible a nature as to be of primary importance, not only as the causal agent, but also as the determining factor in the production of a given symptom-complex.

It would be a great mistake to imagine that in all cases shell explosion is the exciting cause of the trouble. A considerable number of the patients have not been under fire. Some of them have not even gone to the front. Even though their experiences in the army or thoughts of what might be in store for them in the trenches may have played a considerable part in starting their trouble, I do not propose to discuss such cases here. Nor do I intend to consider the problem of what part, if any, war experiences may have played in hastening the onset of general paralysis or in stirring up mental trouble in patients who had previously been inmates of asylums.

But there is a very interesting and important class of patients which ought not to be omitted even in such a hasty survey as this. I refer to men who have stood the strain of trench life and hard fighting for months, or even more than a year, who have been wounded, "gassed," or buried, without any obvious mental trouble ensuing, and who then suddenly break down when resting.

A typical case is that of a non-commissioned officer who went through the first 11 months of the war in France and Flanders, was subjected to every kind of strain, physical, mental, and moral, which that stricken field provided; and in addition was wounded twice, "gassed" twice, and buried under a house, on all five occasions being treated in the field ambulance and then returning to the trenches. After all this experience he had not qualified for sick leave, but was granted five days' ordinary leave to return home, apparently in a good state of health. After reaching the homeland, and while waiting for a train in the railway station, he suddenly collapsed, became unconscious, and for months afterwards was the subject of severe neurasthenia. Apparently at the front the excitement and his sense of responsibility, and especially the example he felt that he should set his men, seemed to have kept him right. This stimulus removed, he broke down. The whole of his trouble seemed to be due to the dread lest, on his return to the front, the added responsibilities which would fall upon his shoulders (because most of his own officers had been killed and there would be new men to replace them) might be too much for him. His intelligence seemed (to himself) to have become numbed by his experiences, and he became conscious of the unreliability of his memory and of his inability to understand complex orders, or, as he put it, "even the newspapers." It was this that excited in him the dread lest he should be incompetent adequately to discharge the duties which would fall upon him. There was nothing of malingering or shirking in his case. There was no fear of physical injuries or of returning to the front; on the contrary, he was anxious to go back. His fear lest the possibility of his failure would be bad for the platoon was wholly due to that remarkable emotion of regimental loyalty, which comes out so strikingly in the nervous troubles of the non-commissioned officer.

This class of case demands a great deal of patient and sympathetic attention before the real cause is elicited, and then months of daily re-education to build up anew the man's confidence in himself.

(To be concluded.)

[1] See, for example, Roger Dupouy, "Notes Statistiques et Cliniques sur les Troubles Neuro-psychiques dans l'Armée en Temps de Guerre," Annales Medico-psychologiques, October, 1915, p. 444.

A STANDARD METHOD OF TESTING ANTISEPTICS FOR WOUNDS, WITH SOME RESULTS.

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ONE of the most astonishing medical facts in connexion with the war is that there is no sort of agreement as to the best method of treating septic wounds. Are we to use antiseptics at all? And if so, what antiseptic? An impartial observer might come to the conclusion that the best treatment depended on the locality. In France, he might say, wounds do best without any antiseptic at all; in England, especially in the Midlands, Dakin's antiseptic is the best; whereas when we cross the Tweed there is nothing to compare with eusol. The fact is, of course, that good results are obtained by all methods (why this is the case I shall discuss in a subsequent paper), and that the skill of the surgeon is of much greater importance than the particular form of lotion he happens to be enamoured of for the moment. I think we may lay down the general proposition that if a wound is properly cleansed and properly drained at a sufficiently early period, there ought to be *no* deaths from sepsis. I am speaking exclusively of wounds as I have seen them in France. But this does not absolve us from the duty of testing all methods of treatment which may be applied subsequently to this surgical toilet of the wound, for some may give us quicker and more painless results than others, and may be easier of application in unskilled hands—a point of considerable importance under conditions such as obtain at present. It behoves us, therefore, to study very carefully all the processes which go on in a wound, and, in particular, the effects of the substances which we propose to apply thereto; and to study them, not only in relation to their action on the bacteria in the wound, but also on the cells and juices of the body itself. The latter is a matter of great difficulty, and I defer its consideration for the present.

It would appear obvious that the first essential in the study of antiseptics for this purpose would be a determination of the relative (and, if possible, absolute) potencies of the various substances which are in use, and it is very surprising to find that this has not been done. Thus I find in a recent paper the carbolic coefficient of a certain antiseptic is solemnly quoted as affording evidence of its value in wounds! Applying this test, we should be led to the belief that perchloride of mercury would sterilise wounds or the secretions from them at a dilution of 1 in 15.000 or thereabouts, whereas it is actually efficacious in a dilution about 100 times less. The carbolic acid coefficient may have a commercial value, but it has no other. More recent writers have tested the action of their antiseptic on bacteria suspended in serum. This is much better, but it is still not good enough. I know of no condition which occurs in surgical practice in which the problem is to sterilise blood serum.

In the early stage of a wound it is filled with blood and blood-clot; in the later it is filled with pus. Obviously, therefore, we should test the action of antiseptics on these substances. Now pus is a very undesirable substance to test in this way for several reasons. In the first place, there is no uniformity in its composition, either as regards the substances in solution or as regards the number of cells. And, more important, the number and nature of the organisms vary enormously, so enormously as to deprive our results of any value whatever. For example, pus containing streptococci only may be completely sterilised when mixed with an equal volume of 1 in 60 carbolic for 15 minutes, whereas if the spores of B. perfringens are present (as is usually the case) they are not necessarily killed when the pus is mixed with equal volumes of 1 in 20 carbolic and incubated at the body temperature for two days. I suggest, therefore, that unless we can find a method of preparing pus of standard composition, and containing a standard number of bacteria, we should abandon this method of testing antiseptics.

Blood presents no such difficulties. It is always at hand and always reasonably constant in composition, and we can add to it what bacteria we like and in the proportions we like. Moreover, it is the actual substance that we have to

deal with if we attempt to sterilise a wound in the earlier stages. Blood therefore appears ideal for the purpose.

In actual practice we have to prepare the blood so that it does not clot. We may use citrated blood, using the smallest amount of citrate possible so as to avoid excessive dilution, but this method fails us if we have to deal with antiseptics containing calcium salts, for these will bring about coagulation in our citrated blood. A better method, though one that is a little more troublesome, is to use "reconstituted blood," made by adding equal amounts of serum and of washed corpuscles. It is prepared as follows. Collect some blood from the finger in a Wright's capsule and allow it to clot. Collect about the same amount of blood, allowing it to drop into citrated saline; centrifugalise; decant off the clear fluid; add normal saline, stir, and centrifugalise again; again pipette off the supernatant fluid and replace it by serum in amount equal to the deposit of corpuscles, and stir. This will give you a fluid almost identical with blood, except that it is uncoagulable.

As regards the organism to be added, for general purposes streptococcus fæcalis (or the enterococcus) is all that can be desired. It is our chief enemy in wounds; it can always be obtained without any difficulty in pure culture; it grows rapidly, so that the results of tests made in the morning can be read off in the evening; and, as a small but important practical point, it readily emulsifies, so that there are no masses to resist the action of the antiseptic. Of course, for other purposes other cultures may be used. The inventor of a new antiseptic might prefer to use B. coli or B. typhosus, which are much more easily killed, whereas the opponents of all antiseptics might use the spores of B. subtilis, and find that it was almost impossible to kill them by any antiseptic; and justify his action by showing that they were very common early infections of wounds. But the streptococcus is sufficient for all ordinary purposes.

Next, as regards the number of these bacteria. This is a point of very considerable importance, and one that calls for some theoretical consideration. The death of a bacterial cell might be considered as being due to the combination of a certain number of molecules of the antiseptic with the protoplasm of the cell; and hence it might be argued that the amount of antiseptic required would be proportionate to the number of bacteria, supposing, of course, that they are suspended in an inert fluid. This is incorrect, for the reason that all bacteria in an apparently homogeneous culture are not alike. Some, perhaps, have just divided, and have not formed a protective cell-wall; others, *pace* Weismann, are decrepit from old age; whilst still others are as strong and resistant as it is possible for a bacterium to be. Hence, if we test our antiseptics on a small amount of culture we shall get varying results according to the condition of the microbes that we happen to take. We can overcome the difficulty in two ways, by using large volumes of the mixture to be tested or by making a relatively heavy inoculation of the blood we are going to use as our test fluid. This is the more convenient method, and in order to take a definite figure I have used throughout a mixture of 9 parts of blood and 1 part of an 18-hour culture of streptococcus, containing about 250,000,000 cocci per c.c. It would perhaps be a little more accurate to count the culture before use, and to add a definite number, but if the same culture is inoculated in the same way into the same amount of standard broth the results are very constant, and with the large implantation given small variations are not of much effect. This is one of the advantages of a heavy implantation, such as I recommend.

The next question concerns the time during which the antiseptic should be allowed to act. This brings us to a point of the greatest importance, but one, I think, that has hardly been adequately dealt with. All antiseptics combine with proteins in solution, or with cells, and hence bacteria lying in pus or blood are shielded from their action. This is recognised as the "quenching" action of these fluids, and it is well recognised that the effect is much greater with different antiseptics; mercury salts, for example, are quenched to an enormous extent, carbolic acid relatively but little. But this is not the whole story. The mixtures of some antiseptics and blood will become an unfavourable culture medium for bacteria, or the compound of the antiseptic and the protein will dissociate, giving a slow but continuous antiseptic action, such as is desired by some surgeons, and referred to as a "depôt-action." With other antiseptics this is not the case, and the antiseptic is either completely destroyed or, at least, rendered inert by combination with protein. Hence if we test the former on infected blood, making a mixture that is not completely sterilised in a certain period of time, say 15 minutes, and then re-test from time to time, we shall find the number of bacteria will steadily fall off. With the second group, on the other hand, there will be a transitory fall in the number of bacteria, after which they will grow, perhaps not so well as before, but under some conditions much better. Carbolic acid is an example of the first class, eusol of the second. For example, a mixture of carbolic acid and infected blood which is just not sterilised in a quarter of an hour will be completely so in one hour, whereas a mixture of eusol (undiluted) and infected blood in equal parts will show some diminution in the number of bacteria if tested after a quarter of an hour, whereas if it is re-tested after one hour abundant growth will have taken place, and it will be indistinguishable from the control. I know this will appear a hard saying to many, but I have no doubt as to its correctness; the addition of eusol in amount insufficient to cause complete destruction of the microbes has no appreciable deleterious effect on the fluid as a culture medium for what remain. I advise, therefore, that the effect of the antiseptic shall be tested after two periods of exposure, and for all practicable purposes these may be 15 minutes and 60 minutes. It might be a good plan to add a third, 2 hours.

As regards the temperature of exposure there can be no difference of opinion. The mixture of antiseptic and infected blood must be incubated at the temperature of the body, the temperature at which they are to be used in practice.

Lastly, what criterion of killing are we to adopt? There is a general idea that the planting-out subsequently to the exposure to the antiseptic must be done in a large quantity of broth, so that any antiseptic may be diluted to such an extent that it ceases to act. I think this is a theoretical point only, and the method quite unnecessary in actual practice; and it has the great objection that it only tells us whether there is or is not complete sterilisation of our test-fluid. If, on the other hand, we plate out on agar and count the colonies that grow up we can tell what dilution of antiseptic will cause partial sterilisation, and what complete; and, moreover, it avoids the possible fallacy that a single microbe which had accidentally escaped contact with the antiseptic, might vitiate our results. The theoretical objection to this method does not take into consideration the fact that most—as far as I know, all—antiseptics diffuse well through agar, so that it is not correct to argue that when a mixture such as I have described is plated out the antiseptic continues to act on the microbes for an indefinite period; it diffuses rapidly away into the substance of the agar, the microbe remaining on the surface. As a matter of fact I have made parallel observations with the two methods, and have got in most cases absolutely identical results.

The technique I have used is quick and easy. The requisites are: (1) infected blood, prepared as described above; (2) the antiseptic to be tested, in suitable dilutions; (3) a stock of capillary pipettes, such as are used in the opsonin technique; (4) large agar-plates, deep, so as to allow diffusion of the antiseptic, and surface dry; (5) a standard platinum loop about 2 millimetres in diameter; and (6) some slides which, when sterilised by flaming, are used to prepare our mixtures on.

The process is as follows. Fit an indiarubber teat to one of the pipettes, and make a grease-pencil mark on the latter about 2 inches from the tip. Then take one volume of infected blood and one volume of antiseptic and mix thoroughly on the sterile slide. Suck back about half into the pipette and seal. Take the other half into another pipette and seal it also. Place the two pipettes in the incubator, noting the time (an opsonin incubator is a great advantage). Repeat the process with the other dilutions of antiseptic, making in each case a mixture of equal parts of antiseptic and infected blood. At the end of a quarter of an hour remove the first of your dilutions, fit on an indiarubber teat, and cut off the tip of the pipette. Sterilise the end lightly in the flame, and expel the contents of the pipette on to a sterile slide, and mix thoroughly. Now take a loopful, avoiding bubbles, with the platinum loop, and spread

it out over as large a surface as possible on the agar plate. Repeat this with the other dilutions when their 15 minutes' incubation is up, and with the second series after an hour has elapsed. Incubate the plates; growth is complete in 24 hours, but the results can be read off before then.

I append some of my results:—

Antiseptic.	15 minutes.		60 minutes.	
	Does not kill—	Kills—	Does not kill—	Kills—
Carbolic acid	1 in 70	1 in 60	1 in 60	1 in 50
Eusol...	Undiluted.	—	Undiluted.	—
Dakin	,,	—	,,	—
Perchloride	1 in 100	1 in 80	1 in 100	1 in 80
Biniodide...	1 in 60	1 in 40	1 in 60	1 in 40
Iodine	1 in 100	?	1 in 100	?
Lysol...	1 in 40	1 in 30	1 in 150	1 in 120
Malachite green ...	1 in 250	1 in 200	1 in 250	1 in 200

The expression "does not kill" may be taken in most cases as implying that it causes a diminution in the number of organisms, but does not effect actual sterilisation; this dilution, therefore, may be taken as a convenient end-point if various antiseptics have to be compared. For instance, there is a tradition that eusol and Dakin's solution are several times more powerful than carbolic acid, whereas, as a matter of fact, it is seen when this method of testing is used that these substances undiluted (0·5) are about equal in effect to a 1 in 70 dilution of carbolic—in other words, carbolic acid is 70 times as strong. But this is only if they are tested at the end of a quarter of an hour; if tested at the end of one hour the chlorine preparations appear to be quite inert, the surviving bacteria having grown until, unless special methods of plating are used, they appear as abundant as in the controls. To demonstrate complete killing with eusol it is necessary to have approximately two volumes of the antiseptic to one of blood.

The killing point of iodine is not given. It is about 1 in 60, but at a dilution like this the blood is turned into a thick pasty mass, very unsuited for accurate work. Iodine is sometimes used in a dilution of 1 in 300 or 400 to "sterilise" wounds. Such a dilution is quite inert.

The results with malachite green may excite surprise; it is by far the most powerful antiseptic that I have investigated. Unfortunately its action on the living cells is even more powerful, otherwise it would be the ideal antiseptic for surgical use.

This work was carried out for the Medical Research Committee, to whom my best thanks are due.

Harley-street, W.

THE TREATMENT OF HÆMORRHOIDS BY INJECTION.

BY F. SWINFORD EDWARDS, F.R.C.S. ENG.,

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As mentioned by Mr. Arthur S. Morley in an excellent paper under this heading which appeared in THE LANCET of March 18th, I brought this subject before the profession in a paper published in the year 1888.[1] I was led to try this method as a substitute for operation by reports from certain American surgeons, amongst whom was Van Buren, professor of surgery in the Bellevue Hospital. In his work on "Diseases of the Rectum" in 1881 he makes mention of the injection of carbolic acid, and states that Professor Andrews, of St. Louis, had collected some thousands of cases treated by carbolic acid, and his conclusions, although in a general sense favourable, are not such as to tempt us to abandon safe and well-known methods without still further trial He says: "Most of the cases thus operated on suffer a sharp temporary smarting, and a few have a terrible and prolonged agony. The majority, however, are cured without interrupting the patient's business."

[1] Brit. Med. Jour., Oct. 13th, 1888.

In spite of this somewhat unfavourable verdict I determined to try this method amongst the out-patients at St. Mark's Hospital. After an experience there of a hundred cases I came to the conclusion that with proper precautions it was quite safe, and except in one or two cases absolutely free from pain. One injection sufficed to cure some, but the majority required two or three spread over some months. It failed in one or two cases owing to prolapse of the swollen piles on the patient's way home, followed by strangulation and sloughing. This was the result of neglect in obeying the instructions given—namely, to replace the piles at once should protrusion occur. These patients were afterwards admitted and underwent the usual operation of ligature by Salmon's method.

The injection treatment having proved so satisfactory, even amongst the out-patients of a hospital which, on account of the long way many had to go in returning to their homes and to a lack of intelligence in some, is a severe test; I adopted it in private, and have continued its practice ever since with satisfaction to my patients and without an accident of any kind.

Mr. Morley uses, I see, the same injection as I do and of the same strength—viz., 20 per cent. of carbolic acid in equal parts of glycerine and water. At first I worked with a 10 per cent. solution, but found on increasing the strength that recurrences were less frequent nor was it attended with pain. I am in thorough accord with all Mr. Morley says as to the cases amenable to this treatment, the precautions necessary for a successful issue, also as to the wonderful saving of time, expense, and sometimes of pain achieved by its adoption, but my technique somewhat varies from his. It is as follows. The piles having been protruded, possibly with the aid of an enema, the patient is placed in the knee-elbow position with the buttocks opposite a good light. The parts are then sponged over with some antiseptic, as lysol and water, and the injection made through a sterilised needle. From 3 to 6 minims of the carbolic solution is injected into the centre of each pile in turn. In large piles I often inject 5 minims in two places. The piles are then smeared with vaseline or sulphate of iron ointment, and returned as soon as possible, for the injection always causes the hæmorrhoids to swell, therefore the longer they remain outside the more difficult are they to return. I advise no action of the bowels for 48 hours, and should prolapse occur in the meantime immediate replacement is essential.

Whilst he injects the piles *in situ* through an anal speculum I always get them prolapsed first and inject them whilst still protruded, returning them immediately afterwards. I am glad to hear that he injects all the piles at one sitting, for this is what I have always done. Several writers have advocated only injecting one pile at a sitting, but I cannot see any reason in this, an unnecessary loss of time it seems to me.

My reasons for having the piles extruded before injecting them are these: 1. It is much easier and one is more certain of getting into the centre of each pile. 2. If the piles are injected through a speculum a special long syringe, such as described by Mr. Morley, is necessary, whereas an ordinary hypodermic syringe suffices when the piles are prolapsed. 3. Piles which cannot be protruded should be left alone. They are to be cured by palliative means, such as local applications, enemata, attention to diet, and regulation of the bowels, &c. 4. An assistant is almost a necessity if a speculum is used, and should any bleeding occur on the withdrawal of the needle, is indispensable. I do not suppose this is as likely to take place as when the piles are prolapsed, but it might occur, when an extra pair of hands would be useful.

As I have said, a large number of cases of internal hæmorrhoids can be cured by palliative treatment—by this I do not mean the use of nutgall ointment,—but when protrusion occurs on exertion or at stool, when bleeding is sufficient to cause anæmia and troubles arising therefrom, or when the piles protrude and require replacement, some operative interference is imperative. Before any operation is undertaken it is essential that a thorough examination should be made to avoid overlooking a rectal carcinoma or other trouble high up, an accident which even to-day is constantly happening in spite of repeated warnings from others (Mr. Morley included) as well as myself. Cases fitted for injection are those of uncomplicated internal hæmorrhoids which can be protruded, then returned and kept

within the bowel. In hospital practice one finds really but few cases of uncomplicated piles, for most of those admitted for operation have in addition one or more of the following lesions—viz., external tags, fissure, hypertrophied papillæ, ulceration, and even fistula, or are of the intero-external variety. In a short paper [2] on this subject, to show how comparatively few cases are fitted for the injection treatment, I instanced an afternoon's work at St. Mark's Hospital, where I had 11 cases of piles to operate upon. Of these, 10 were complicated by other lesions—viz., 4 with fissure, 4 with external piles, 1 with an anal ulcer, and 1 with a thrombosed internal pile. In private, however, the reverse is usually the case.

I am in accord with Sir James Goodhart and one or two other writers that this method of treatment deserves to be more generally employed than it is at present, but he seems to have arrived at this conclusion from a somewhat unfortunate experience of the immediate and after-results of operation, whether by the ligature or by Whitehead's method.[3] His experience of the latter coincides with my own. Theoretically it is splendid, but practically it is far inferior to either the ligature operation or to the clamp and cautery, so that I never advise this method and I am glad to see it is rapidly falling into disrepute. But concerning the former, after an experience of over 6000 operations for hæmorrhoids, I may say that I think there is no more successful operation in the whole range of surgery than is "Salmon's" ligature operation as practised to-day. It is equally fitted to both simple and complicated cases, is devoid of risk, often but little pain is complained of, and convalescence is usually a matter of three weeks. If properly performed recurrence is so rare that it need not be taken into account. It is quite true that an anal stricture may result, but if this necessitates an operation it is generally owing to neglect or ignorance on the part of the medical attendant. If a finger is passed between the eighth and tenth days—i.e., when the ligatures have separated—any suspicion of on-coming contraction is discovered and dilatation at once regularly resorted to. In such cases at all events we can promise no further return of piles. Although I have often had to dilate about a fortnight after the operation either with a bi-valved speculum or with metal dilators, I have never had to resort to a cutting operation to cure this condition.

After the injection a few hours in bed are advisable, after which the patient can walk about and attend to his usual occupation. He has no pain and begins to get better at once. Often all bleeding and prolapse cease after the first injection, which may suffice for a cure. Latterly I have not often had to repeat the injection, and when it is necessary a year has probably elapsed and all the symptoms are ameliorated.

The great advantages of the injection treatment are: (1) No confinement to bed excepting for a few hours when possible: (2) no anæsthetic, and therefore no post-anæsthetic vomiting; (3) no pain; (4) no enforced absence from business; (5) no risk from the little operation itself and no risk of stricture or incontinence following; and (6) immediate and steadily increasing betterment.

As an advocate for this method, I cannot put it stronger than by saying that if I were the subject of uncomplicated reducible internal hæmorrhoids which called for operative interference I would select injection in preference to any of the recognised operations, always provided that it could be carried out by one who had had at least *some* experience of its simple technique.

Grosvenor-street, W.

[2] Practitioner, March, 1915.
[3] Ibid., December, 1914.

NORFOLK AND NORWICH HOSPITAL.—The report of this institution for the year 1915 shows that 2281 patients from the British Expeditionary forces were admitted to the wards, making a total of 3218 wounded who have received treatment since the commencement of the war. The death-rate for the year was only 0·8 per cent. In addition 295 men from the troops in training in the district were treated, the death-rate in this case being 2 per cent. The total number of in-patients, civilian and military, treated during the year was 5057, while the out-patients numbered 5492. The income for the year was £29,853, and the expenditure £26,437, the deficit on the accounts thus being reduced from £4073 to £823.

METHODS OF PREPARING SPHAGNUM MOSS AS A SURGICAL DRESSING.

BY CHARLES W. CATHCART, F.R.C.S.,
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THE War Dressings Supply Organisation, Edinburgh, has latterly dealt with sphagnum moss exclusively, while in many parts of the country the voluntary organisations for preparing hospital requirements have added new departments for dealing specially with it. Miss McCaul, the organiser of the admirable St. Marylebone War Hospital Supply Depôt at 2, Cavendish-square, London, was the first to take it up in England, and others have followed her example. In the near future the enterprise is likely to develop rapidly.

In the present paper I wish to draw attention (1) to the relative merits and advantages of three useful methods of preparing the moss—namely, sterilising by steam, "sublimating," and compressing; and (2) to the feasibility of carrying out these methods, including compression to a limited degree, by the use of simple appliances, and in premises easily obtained. These special methods begin after the moss has been collected, picked free of grass, leaves, sticks, &c., and dried. This work should, if possible, be carried out before it is sent to the central workrooms. In its natural state the moss contains a few non-pathogenic organisms, mostly moulds, but as other germs may obtain access to it sterilisation is necessary. Two methods have been employed:—

1. *Sterilisation by steam.*—This method, whether carried out in a high- or a low-pressure steriliser, hardens the walls of the minute tubules, and inhibits, although it does not destroy, the absorbing power. When fluid reaches the moss—especially warm fluid—the tubes are again softened and absorption takes place, although somewhat slowly. Sterilised pads of sphagnum moss, even when applied dry, have proved to be a better absorbent dressing than cotton-wool. Testimony to this effect has been received from war hospitals in all parts of the continent and Great Britain. If such pads are, however, wrung out of an antiseptic lotion just before use the full power of absorption is restored, and this simple procedure is to be recommended.

2. *Sterilisation by corrosive sublimate.*—This has been chosen as a suitable antiseptic material with which to charge the moss. It is non-volatile, relatively cheap, and very powerful. Moreover, the sublimating process is easily carried out and does not at all affect absorptive power. Contrary to what might have been expected, corrosive sublimate does not become fixed, and is readily given out again so as to render antiseptic any fluid which the moss absorbs.

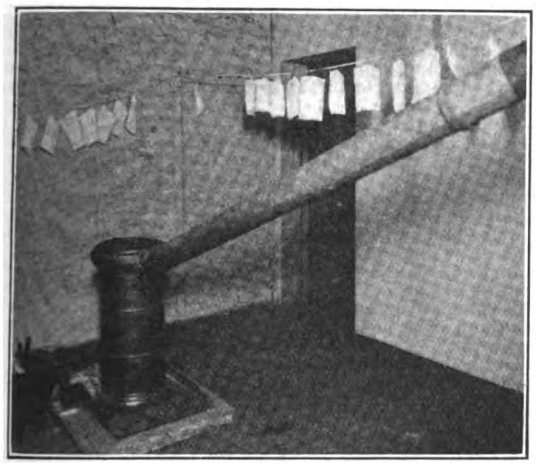
Apparatus required for sterilising by steam.—This method may be employed before the dressings are sent to the hospitals, in which case it will be better to obtain the use of a steam disinfector, which is a steriliser on a large scale; or it may be employed at the hospitals, when the hospital or operating theatre steriliser can be used. For the use of small hospitals and for army purposes near the front I have described [1] a simple portable low-pressure steriliser which has done good service in war hospitals at home and abroad. As some surgeons doubted the effectiveness of steam at atmospheric pressure for surgical dressings, I have had this steriliser re-tested recently. Professor James Ritchie, who kindly undertook the tests, found the results perfectly satisfactory. Copies of his report can be obtained from the makers, Messrs. J. H. Thom and Co., 67, Dundee-street, Edinburgh. The original maker has been appointed to the charge of a large factory in South Africa.

Protection of dressings after sterilisation.—This can be done in one or other of several ways:—

1. To enclose them in material permeable to steam but proof against the entrance of solid particles. This is the method adopted by the Edinburgh War Dressings Supply Organisation. Groups of moss dressings are sewn up in flannelette bags, which after sterilisation are not opened till they reach the hospital where they are to be used. The flannelette can be used by the nurses as lint or in many other ways.

[1] Brit. Med. Jour., Dec. 19th, 1914.

FIG. 1.



Drying room: the slow-combustion stove.

2. To enclose them in boxes or wrappings of close paper or waterproof cloth, impermeable both to steam and to dust, but left open at one or two places during exposure to the steam. By the great penetrating power of saturated steam—a power quite independent of its pressure—the dressings are thus efficiently sterilised. The apertures in the coverings having been closed with due precautions, the dressings are afterwards quite safe. This method, with various individual modifications, has been adopted by several other organisations.

Sublimating the moss.—The object is to charge the material with a given percentage of corrosive sublimate.

The proportion adopted for moss is that commonly added to cotton-wool—namely, 0·25 per cent.; thus 100 lb. of sublimated moss or cotton-wool would contain ¼ lb. of corrosive sublimate. Reckoning the lb. avoirdupois as 7000 grains this would give 17·5 grains of sublimate in every pound of moss. A very convenient way of obtaining these 17·5 grains is to use two of the tablets issued commercially for making a 1 in 1000 sublimate lotion in 20 oz. of water. Each tablet contains 8·75 grains of sublimate.

In order to determine the strength of the solution in which to soak the moss we must find out what will be a convenient quantity of fluid to leave in the moss after it has been wrung out of the charging solution. This will depend, among other things, on the efficiency of the squeezing apparatus. The exact quantity does not matter so long as the method adopted in making the calculation is always adhered to afterwards. When using the appliance described below it will be found quite easy by suitably adjusting the tightening screw to leave 20 oz. of water in every pound of moss. Thus, 16 oz. of dry moss will weigh 36 oz. after having been soaked and wrung. A few experiments with water should be tried in order to find how many threads of the screw have to be brought into action in order to produce this result. When this degree of compression has been attained this will be the tension required afterwards. Any number of gallons of solution can be made by adding at the rate of two tablets to each imperial pint of water. This, a 1 in 500 solution, is a very powerful antiseptic.

With regard to premises and apparatus, I have, after consultation with an architect friend, Mr. Jerdan, transformed an empty hay-loft with a wooden floor into a sublimating and a drying-room, and have equipped it with the necessary appliances of a simple character so as to make sure that such a scheme is feasible at a small cost. The methods employed can be carried out in country districts with the help of a village carpenter. Modifications of such an arrangement could be easily made if the principles involved in this example are understood.

The drying room may be described first, since this involves structural alteration. We need a chamber the air of which can be heated to 70° or 80° F., while the air is being constantly renewed so that the accumulating vapour may be carried off.

As the heating arrangements bear a proportion to the cubic space to be heated, it may sometimes be necessary, as in my case, to run a partition across a room which is bigger than required. It occurred to me that a very simple form of partition would serve if it were composed of two air-proof surfaces with a good layer of air, as a non-conducting medium, between them. This has proved quite satisfactory. An open frame-work of wood was erected from floor to ceiling at the desired distance from one end of the large room. The light standards employed were 6 inches broad to ensure sufficient air space. The coarse canvas known by builders as "scrim" was then stretched over each side of the frame-work and nailed to the wood, and white wall-paper was pasted over the canvas. The position of the doorway through the partition was chosen so as to be close to the spot where the stove was to stand for a reason explained later.

The heating arrangements were carried out so as to utilise all the heat available from a slow-combustion stove while ensuring a constant exchange of air. At one corner of the room, now shut off by the partition, an open form of stove had been previously fixed up with a large flue running vertically upwards inside the room to the roof. This stove was removed and the flue cut off a few feet from the roof. (I had wanted it cut at a higher level, but the present arrangement—finished before I saw it—seems to work quite well.)

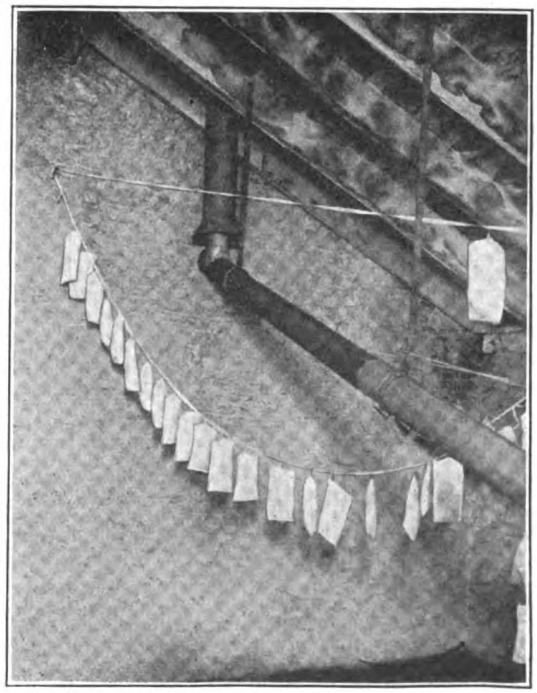
A slow-combustion stove[2] was placed on a paving stone near the door (Fig. 1) at the opposite end of the room from the site of previous stove, and the flue from the new stove, 4½ inches in diameter, was carried obliquely upwards, suspended from the roof, until it passed inside the cut end of the original flue 6¼ inches in diameter. (Fig. 2.) The space thus left between the two flues serves a double purpose—viz., it obviates risk of fire at the roof and it causes a steady up-draught of vapour-laden air during the drying process.

The entrance for cold air is provided in the lower panels of the door, where a number of inch holes bored through the wood are protected with adjustable shutters. The windows are covered over with translucent tracing cloth at a little distance from the glass to establish an air-space, and as all other apertures in the room are closed the cold fresh air has only a few feet to traverse before it reaches the stove. Having been thus heated low down at one end of the room it rises and circulates until it escapes near the ceiling at the other end. The hot flue, as it passes through the room, of course greatly supplements the heating action of the stove. The floor of the drying-room measures 14 ft. 6 in. by 12 ft. The partition is 10½ ft. high and 14 ft. 6 in. long, except where the door passes through it. The ceiling extends at the full height of the partition for 4 ft., after that it slopes down to a height of 6 ft. at the outside wall of the building.

When the drying room was tested the air in the outer or sublimating room was about 47° F., as shown by a thermometer hung against an outer wall—i.e., much the same as the temperature of the outer air on that day. A thermometer hung against the partition stood at 50°. In the drying

[2] Smith and Wellstood, Eclipse No. 12.

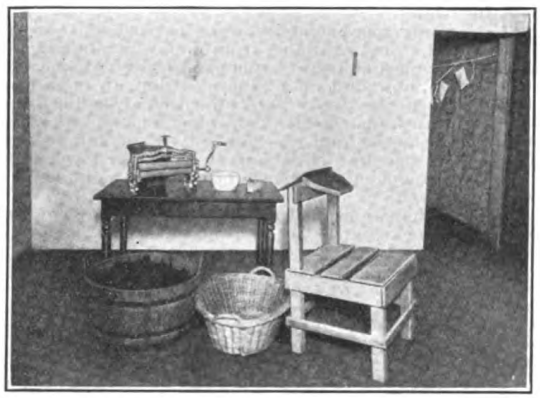
FIG. 2.



Drying room bags hanging on lines.

room a thermometer on the partition back to back with the one in the sublimating room registered 76°, and in a warmer, but not the warmest, part of the room a fourth thermometer stood at 79°. A series of sublimated bags were dried in 12 hours. Considering that sphagnum moss is very difficult to dry, and that the stove was not being burned at all fast, these results are quite satisfactory.

FIG. 3.



Sublimating room: the apparatus required.

Sublimating room.—This room need not be larger than suffices for the convenient working of the sublimating appliances. It should be as near as possible to the drying room, if not actually next to it. The sublimating process involves making the solution, soaking the moss in it and wringing the moss partially dry again. (Figs. 3 and 4.)

To make the solution we require a supply of the tablets of corrosive sublimate (to be had through a chemist); an enamelled or earthenware bowl and a pestle, or a piece of hard wood, for breaking them down quickly, a pail, and a pint measure for measuring out the required quantity of water.

The moss must be soaked in a wooden, enamelled, or earthenware tub, as corrosive sublimate will attack any exposed metal. For the same reason the solution should not be allowed to pass down metal drain pipes; this restriction will cause no inconvenience, since the solution squeezed out of a given quantity of moss can be used over and over again. A large oak washing-tub, 26 inches in diameter and costing 9*s.* or 10*s.*, makes as good a soaking tub as one could wish. It should stand on a "tub-chair" or "tub-stool" such as is used by cottagers; they are to be had ready made. On the upright rail or back of the tub-chair the wringer is attached, and to facilitate the work of "sublimating," the following simple woodwork should be fitted under the wringer by a carpenter. On the tub side of the wringer one shelf should slope down from the rail towards the tub. It should have a fillet of wood on each side so as to make a channel which narrows from the full width of the rollers as it passes backwards. This channel leads the solution squeezed out back into the tub. On the other side of the rail a second shelf sloping away from the tub directs the moss bags as they leave the wringer into a clothes-basket placed below. Between the two shelves a short vertical partition should rise up to prevent the solution, carried forward by the lower roller, from reaching the front shelf and wetting the moss again. Its upper edge should be about ½ inch below the line of junction between the two rollers and about ¼ inch from the surface of the lower one—not closer. The wringer I have used is known as the "Acme," costing about 24*s.* It has rubber-covered rollers, 16 inches broad. Other patterns would, no doubt, serve the purpose equally well.

For the purposes of a simple outfit there are several advantages in sublimating the moss in muslin bags rather than in loose form, which is only required when the moss is to be compressed into plates by hydraulic pressure. A medium-sized bag, about 7 × 4 inches, will be found very suitable. In the bag form the moss is very easily handled when being soaked, wrung, and dried; it is not exposed outside its bag after having been sublimated, and there are no loose fragments of moss to make a dust or catch fire in the drying room. In addition, by the use of the wringer the dried bags can be compressed to a degree which is of great practical use for packing purposes, although not so complete as that produced by expensive hydraulic machinery.

The actual work of sublimating can be done well by one person, but better by two. The bags are thoroughly soaked in the solution for a few minutes, then gently squeezed with the hands and passed through the wringer. Rubber gloves are necessary to protect the hands, as the sublimate hardens and cracks them.

A convenient and cheap way of hanging up the damp dressings in the drying room is to have a series of lines or ordinary tape hung up in suitable places. A common safety-pin is inserted first through the tape and then through the edge or corner of a bag. This is repeated at intervals of 6–8 inches until the line is full. (Figs. 1 and 2.) A good test of a bag being dry is that it crackles when gently pressed. Unless the bags were fixed to the line they would sag together at the centre, whereas for rapid drying each should hang clear of the other. When a bag is taken down the safety-pin remains to do duty for the next one.

Compression with wringer.—This method may be employed when it is important to reduce the bulk of the dressings for transport. The bags must be thoroughly dry in order to be compressed; a damp bag is elastic and springs out again. The rollers if damp must be dried with a clean towel. The maximum pressure having been produced by the tightening screw of the wringer each bag is passed through twice, once in its ordinary shape, a second time when folded once upon itself. This makes it into a firm easily handled piece less than half its original bulk.

The bags after having been sublimated and dried are ready for use whether in the compressed or the loose form. They must on no account be sterilised by steam. When being packed for transit they may be enclosed in either flannelette bags which have been separately sublimated or sterilised, in paper bags, preferably waterproof, or in waterproof cloth. All moss dressings being very absorbent should be protected from moisture, but this is specially true of compressed moss, which if wet would probably burst open the packing cases.

FIG. 4.



At work in the sublimating room.

The structural alterations were carried out by Messrs. John Watherston and Sons, builders, Edinburgh, at a cost of £10, exclusive of the disused stove, which, with its iron tray, originally cost about £2. The "tub-chair," costing about 7*s.*, was procured for me and altered to my design by Mr. Mitchell, 8, Lady Lawson-street, Edinburgh. Mr. A. H. Baird's photographic assistant, Mr. McConnachie, took the excellent flash-lamp photographs with which the paper is illustrated. No attempt has been made in this paper to describe the appliances kindly put at the disposal of the Edinburgh War Dressings Supply Organisation by Sir John Cowan at Messrs. Redpath, Brown, and Co.'s workshops at Albion-road, Edinburgh. The processes are exactly similar in principle but conducted on a much larger scale by the use of expensive machinery requiring steam and electricity. Sir John Cowan has kindly invited anyone practically interested in the subject to visit the works and inspect all that is being done.

Edinburgh.

A NOTE ON THE PRECIPITIN REACTION IN TUBERCULOUS FLUIDS.

BY S. ROODHOUSE GLOYNE, M.D. LEEDS, D.P.H.,
PATHOLOGIST, CITY OF LONDON HOSPITAL FOR DISEASES OF THE CHEST, VICTORIA PARK, E.

SINCE Kraus [1] first noted that precipitation took place when the blood sera of animals immunised against cholera were added to the filtrate of cholera cultures a new chapter of immunity has been written. Until quite recently, however, precipitins have received attention chiefly from the standpoint of the biologist and the medical jurist (Nuttall,[2] Graham Smith and Sanger [3]). The work of Ascoli [4] on precipitins in anthrax, Isabolinsky and Patzewitsch [5] in the typhoid-coli group, Iwicki [6] in swine fever, Piras [7] in bubonic plague, and Faginoli [8] in tuberculous sputum has suggested to the writer that this precipitin or bacterio-precipitin reaction might be of some use in the diagnosis of tuberculous pleural fluids in which bacilli often cannot be found without great difficulty.

Method.

Various dilutions of the fluid were made in test-tubes—viz., 1 in 5, 1 in 10, 1 in 25, and 1 in 50. A row of small test-tubes (3 inches × ¼ inch), each containing 0·5 c.c. of Koch's old tuberculin, was placed in a rack. To the first of these was added 0·5 c.c. of undiluted fluid, care being taken to pour it down the side of the tube, as in doing the nitric acid test with urine (a graduated pipette is almost essential for this). To the second tube was added 0·5 c.c. of a 1 in 5 dilution of the pleural fluid, to the third a similar amount of 1 in 10 dilution, and so on. Controls were also made with (1) 0·5 c.c. saline + 0·5 c.c. tuberculin, and (2) 0·5 c.c. saline + 0·5 c.c. undiluted pleural fluid. The rack of tubes was placed in the incubator for one hour and at the end of this time a positive result was indicated by the presence of a white ring at the junction of the two fluids. Usually this precipitation took place in all dilutions tested—i.e., up to 1 in 50—though occasionally it was absent in this last dilution.

Results.

Four definitely tuberculous fluids were tested (three contained bacilli, and the fourth, though no bacilli were found, was verified post mortem). Of these four fluids three gave positive reactions (75 per cent.). Fourteen fluids were also tested in which the diagnosis could not be definitely proved by the finding of bacilli, but in which a lymphocyte count, high protein content, &c., strongly suggested a tuberculous origin. Of these, five (36 per cent.) gave a positive reaction, two (14 per cent.) a doubtful, and seven (50 per cent.) a negative result. Four non-tuberculous fluids used as controls were all negative.

Conclusions.

It would be extremely unwise to draw any very definite conclusions from the few results here recorded, but it seems possible that the test may be of some use in cases of tuberculous effusion where bacilli have not been found in the fluid. It is also probable that the results might be improved greatly with more careful technique and a more delicate antigen. If it should prove reliable, the test has at least the advantage of simplicity.

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Victoria Park, E.

ASYLUM WORKERS' ASSOCIATION.—The annual general meeting of this association will be held at 11, Chandos-street, Cavendish-square, W., on Wednesday, May 17th. The chair will be taken at 3 P.M. by Sir John Jardine, Bart., M.P., president of the association. The annual report will be submitted, officers elected, and presentations will be made of medals for long and meritorious nursing service. Matters of much importance to asylum workers will be discussed, and it is hoped that there will be a large and representative gathering of members and friends of the association.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

IMPERFORATE HYMEN IN A BABY:

A NOTE FOR PRACTISERS OF MIDWIFERY.

BY HERBERT R. SPENCER, M.D., B.S. LOND., F.R.C.P. LOND.,
OBSTETRIC PHYSICIAN TO UNIVERSITY COLLEGE HOSPITAL, LONDON.

FOR many years I have been in the habit of examining in the course of the puerperium the vulva of the babies I have delivered, with the view of detecting abnormalities, especially of the hymen. For want of this simple examination imperforate hymen escapes notice till menstruation occurs, when the pain, distension, ill-health, and non-appearance of the menstrual discharge lead to a gynæcological examination and the condition is discovered. Unfortunately, sometimes the distension of the genital tract has involved the Fallopian tubes when the case is seen; the patient has been rendered sterile, and the risk of treatment is much increased. All the cases I have seen of this condition have recovered after evacuating the menstrual blood through an incision in the hymen; but one patient in whom hæmatosalpinx had already formed and who refused to have the tubes operated on had a severe attack of peritonitis after the evacuation of the blood from the vagina and uterus.

The object of this note is to urge practisers of midwifery to make a routine inspection of the vulva of female babies before the puerperal attendance ceases. If the hymen is found to be imperforate and bulged forwards by secretion, a snip with a pair of scissors will save the patient from a grave risk to her fertility, health, and even life. The point may be illustrated by the following case in which the malformation was discovered by an observant mother.

A baby girl 11 weeks old was brought to University College Hospital on Dec. 4th, 1915, on account of a swelling in the vulva which the mother had first noticed a fortnight previously. On inspection the labia were separated by a cystic swelling of the size of a small marble which became a little more prominent when the infant cried. It was obviously the imperforate hymen. (See illustration.) Its most prominent part was seized with mouse-tooth forceps and an elliptical piece was snipped out; about a drachm of mucus escaped from the vagina, and the hymen sank back to its normal position. A thin strand of oiled gauze was inserted into the hymeneal opening for a few days. A fortnight later the parts had a normal appearance. The mother was instructed to bring the baby to the clinic from time to time in order to make sure that the aperture did not close.



Case of imperforate hymen in a baby (natural size).

Harley-street, W.

A CASE OF IMPERFORATE HYMEN.

BY WILLIAM ROBERTSON, M.D. GLASG.

THE patient was a strong native, otherwise without defect, 17 years of age, and had had menstrual molimina for three years. These had been severe and characterised by abdominal pain and pain in the back, but without the escape externally of any blood. Lately micturition and defæcation had been painful and obstructed. Everywhere the abdomen was soft and painless to palpation and only slightly distended. Percussion was normal. There was no fever or loss of appetite. There was perfect cessation of pain between attacks. The genitals were normal but for the thick, bulging membrane completely closing the introitus vaginæ. The urethra and

anus were more or less everted and distorted. The bulging septum, 3 inches long and 1¾ inches broad, was evidently under strong pressure, and resembled generally protruding membranes. Examination per rectum discovered a great tumour obliterating the lumen of that tube.

After passing the catheter and drawing off several ounces of clear, normal urine, with a trocar and cannula the septum was perforated (not easily) and black tarry fluid was ejected a yard or two. In all about 20 ounces of this fluid was allowed to run off gently. The next day I withdrew some more. Then with a catheter in the bladder and observing the anus (for the parts were now much contracted) a free opening was made with scissors and finger in the septum, notching it all round. All the parts were normal but for the huge distension of the vagina. The operation of emptying this hæmatocolpos produced no discomfort at all, while defæcation and micturition became normal and discharge from the vagina abundant and odourless; no injection was used. One or two salt and citrate tabloids were left in the vagina.

No doubt the menstrual flow was inhibited in amount owing to the pressure experienced during the three or four years of the obstruction. Escape of blood through the fimbriæ had not taken place in this case. The tendency for the opening to close is great in these cases; every effort must therefore be used to maintain the ground gained by suitable measures.

St. Mark's, Cape Province, South Africa.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF PSYCHIATRY.

The Psychology of Rumour.

A MEETING of this section was held on March 28th, Dr. F. W. MOTT, the President, being in the chair.

Dr. BERNARD HART read a paper entitled "The Psychology of Rumour." Rumour he defined provisionally as the transmission of a report through a succession of individuals, the product of the narratives of a series of witnesses. The reliability of a rumour depended on the accuracy with which such statements were transmitted, and ultimately upon the accuracy of the report furnished by the first member of the series, who was assumed to have seen or heard the occurrence itself. The report furnished by the actual witness of an event constituted "evidence" in the legal sense of the term, and it was clear that an investigation of its psychology must logically precede that of rumour. In former days the criterion of reliability was held to be the moral character of the witness. The question debated at that period was whether a witness was honest or dishonest, or whether he was trying to mislead with definite conscious ends in view. If such scrutiny resulted in the individual's favour all his evidence was accepted. Nowadays, however, the reliability of each individual statement was separately estimated, each possible influencing factor being taken cognisance of, including the unconscious action of political and other bias. Extensive experimental investigations into the psychology of evidence had been carried out, especially by Stern and his school. The method adopted generally consisted of submitting a predetermined experience to a number of subjects who were subsequently required to furnish a report of their experience. These reports were compared with the original experience, and the various results in that way were evaluated. Two methods of obtaining the report were employed, the narrative and the interrogatory (cross-examination). These experimental investigations completely upset the naïve views still held generally by the laity—namely, that evidence given with the best knowledge and interest was a correct reproduction of actuality; and, secondly, that evidence which was false must be due to either lying or culpable carelessness. Completely correct reports were not the rule but the exception. One investigator found in 240 reports only 2 per cent. of errorless narratives. The average reporter, when no suggestive or leading questions were employed, exhibited a coefficient of accuracy of only 75 per cent. Attestation was not found to be a guarantee of accuracy, for even in sworn testimony 10 per cent. of errors were found to be present. On increasing the time-interval between the event and the report it was found that though range and accuracy were both diminished the degree of assurance of the reporter showed a surprising constancy. Hence a person's degree of assurance and readiness to swear to the truth of his testimony depended on the character of the person rather than upon the quality of his memory. Evidence given by children should be accepted with the greatest caution, for the assurance of children was relatively high, while their capacity for reproducing what they had seen was very low. After a historical résumé of the work of previous investigators, Dr. Hart proceeded to analyse the psychological factors leading to the perversion of evidence, dividing the processes involved into perception, conservation, and reproduction, and especially dwelling upon the part played by "complexes" in the distortions affecting each of these processes. The facts of pathology were of great help, and a consideration of hallucinations, illusions, the paramnesias of alcoholics and paralytics, and particularly of the condition known as "pseudologia phantastica," showed precisely the same causes at work as in the perverted evidence of the normal man, but, of course, in a more exaggerated degree. The action of phantasy was of the greatest importance both in pathological conditions, such as hysteria, and in the production of certain rumours in normal men. Dr. Hart passed on to consider rumour as a social phenomenon and analysed its relation to the psychology of the crowd. The views of Le Bon, Conway, and Trotter were described and criticised. The peculiar susceptibility of the crowd to the action of "herd instinct" explained the ease with which non-rational opinions and beliefs were embraced by it, and hence its increased liability to the acceptance and propagation of rumours. During a great war herd instinct was stimulated to a maximum degree, and the prevalence and vitality of rumour were, for the same reason as in the case of the crowd, also greatly enhanced. Dr. Hart concluded by enumerating and classifying the various types of rumours, analysing the factors responsible for their origin, and illustrating his contentions by examples drawn from recent history.

The ensuing discussion was participated in by the PRESIDENT, Sir GEORGE SAVAGE, Mr. J. C. FLÜGEL, Professor H. W. CARR, Dr. W. H. B. STODDART, Dr. PERCY NUNN, Dr. ERNEST JONES, and Mr. J. HERBERT PARSONS.

Dr. HART briefly replied.

ÆSCULAPIAN SOCIETY.—A meeting of this society was held on March 17th at the Metropolitan Hospital, Dr. P. Hamill, the President, being in the chair.—Dr. Stansfeld read a paper in which he considered the following applications of transfusion: 1. Immediate supply of red blood corpuscles in various types of anæmia. 2. Hæmostatic action. 3. Stimulation of blood formation. 4. Influence upon certain toxæmic conditions, such as the toxæmias of pregnancy, urticarias and bullous skin eruptions, &c. These indications, except the first, were, he said, met by the administration of serum, and the serum employed need not necessarily or always be of human origin. But against animal serum, even if proved to be as efficient as human serum, there are the objections of serum disease and the rendering of the patient anaphylactic, so that subsequent repetition of treatment may be harmful and even dangerous. Serum he considered to have advantages over whole blood in that it can be safely kept and more easily administered, while the changes which occur during the process of clotting may be of importance, and possibly they are sometimes advantageous. But in the treatment of anæmias, at least, he held it most rational to administer whole blood intravenously. The donor must be carefully selected. Isohæmagglutinins and isohæmolysins should be absent from the blood of both donor and patient; separate tests should be carried out for each pair of individuals, as even blood relationship does not necessarily afford security. The method employed could be: (1) Direct, by anastomosis, with or without a cannula; (2) indirect: (*a*) by syringe, as used by Lindemann; (*b*) by syringe and two-way tap; (*c*) with paraffin-lined receiver; (*d*) with receiver and use of an anticoagulant, such as hirudin or sodium citrate. Dr. Stansfeld then demonstrated his own apparatus, and reported the results in some of the cases treated, with special reference to pernicious anæmia.

Reviews and Notices of Books.

The Positive Sciences of the Ancient Hindus.

By BRAJENDRANATH SEAL, M.A., Ph.D. London: Longmans, Green, and Co. 1915.

ONE of the most important signs of a great awakening in India at present is seen in the fact that some of her best sons who were hitherto content to learn from oriental scholars like Sir William Jones, Colebrook, Wilson, Max Müller, and others are now diligently searching their Sanskrit literature themselves, and by their original investigations are furnishing much material to widen the scope of comparative science and thought. Dr. Brajendranath Seal, an eminent student of the literature of the East and the West, has, in his recent volume, given an insight into the early scientific achievement of the Hindu mind. In dealing with the positive sciences of the Hindus the author has largely confined himself to the millennial period, 500 B.C.–500 A.D. In the wide range of their intellectual activities the ancient Hindus excelled chiefly in philosophy, mathematics, and medicine.

1. *Philosophy.*—The main bulk of the philosophical systems of the Hindus must have been thought out about the time of Buddha, if not earlier. It is wonderful that with such poor materials and crude instruments at their disposal they should have made so much progress and anticipated so many discoveries of the last few centuries. To give one or two instances. The atomic theory of Kanada, the theory of the propagation of sound, of ether (ákáśa) in space, the statement that light and heat are but different forms of the same substance excite our admiration even at this distant date. The evolution theory of Kapilla, the originator of the oldest philosophy in the world, is remarkable for its originality and its daring conception of the oneness of the universe and of life. The ancients said: "The original Energy is one and ubiquitous, and everything therefore exists in everything else. ..... Inorganic matter, vegetable organisms and animal organisms are essentially and ultimately one so far as Mass and Energy are concerned." At the present day we are struggling in our doubt as to whether the inorganic can ever pass into the organic world, or matter into life. The ancient Hindus more than 2500 years ago believed that matter has no separate existence, but is only a manifestation of spirit, and that life is immanent in all things—thus brushing aside modern classification as artificial.

2. *Mathematics.*—Professor Monier Williams submits that "to the Hindus is due the invention of algebra and geometry and their application to astronomy." The Vaiśesika theory of motion is the nearest approach to Newton's First Law of Motion. The Vyasa-Bhashya (fifth or sixth century A.D at latest) contains the theory of potentials in a nutshell—the finest example before Newton of the exercise of scientific imagination. Dr. Seal supports the claim of Bhaskara (1150 A.D.) to be regarded as the precursor of Newton in the discovery of the differential calculus as well as its application to astronomical problems and computations.

3. *Medicine and Chemistry.*—Susruta's (of pre-Christian era) description of making caustic alkalies from the ashes of plants is a proof of the high degree of perfection the Hindus attained in scientific pharmacy at an early age. They were the first nation to employ preparations of mercury internally. The processes of calcination and sublimation were discovered by them. In the preparation of mineral acids and metallic salts, in advancing the knowledge of chemical compounds and utilising them in the service of medicine, Indians like Nágarjuna and Patanjali anticipated Paracelsus and his followers by several centuries. In chemical industries must be mentioned the three Indian discoveries which enabled India to command for so many centuries the markets of the East and the West: (*a*) the preparation of fast dyes for textile fabrics; (*b*) the extraction of the principle of indigotin from the indigo plant; (*c*) the tempering of steel in a manner worthy of advanced metallurgy. The materia medica of the Hindus is very voluminous, and many of the Indian drugs are found in the writings of Hippocrates, Dioscorides, Aetius, and Arabian works, and through them were introduced into European medicine. Clear references to the circulation of the blood, the difference between arteries and veins occur as early as in the writings of Charaka and Susruta who, however, attribute to the liver the part played by the lungs in the purification of blood. Susruta believed that the blood derived its colouring matter from the spleen. The Hindus were the first among the ancients to practise the dissection of the human body for purposes of demonstration. They used various forms of surgical instruments made from the finest steel for which India was justly famous from remote times. They performed amputations, abdominal section, lithotomy and cranial surgery, and gave as anæsthetics medicated wine, the inhalations of fumes of burning hemp, and a drug called sammohini (producer of unconsciousness).

The more that Sanskrit works are examined by competent Indian scholars, the more it will be evident how thoroughly the Hindus cultivated medical and other sciences as early as 500 B.C., between which period and 500 A.D they seemed to have reached the high-water mark in their civilisation. The author does not claim that the present volume contains a complete account of the subject. But by his original research he has broken new ground, and has therefore made a valuable contribution to the study of the scientific achievement of the ancient Hindus.

A Handbook of Medical Diagnosis for the Use of Practitioners and Students.

By J. C. WILSON, A.M., M.D., Emeritus Professor of the Practice of Medicine and Clinical Medicine in the Jefferson Medical College, and Physician to its Hospital. Fourth edition, thoroughly revised. London and Philadelphia: J. B. Lippincott Company. Pp. 1441. Price 25*s*.

IN our review of the third edition of this work[1] we explained the nature and scope of the book and expressed the favourable opinion we had formed of it. The present edition has brought the subject matter fully up to date, and many necessary changes have been made. The consideration of the electrocardiograph has been transferred to its proper place among instruments of precision. The normal tracings are explained, and some of the characteristic tracings of morbid conditions are shown, such as those of extrasystoles and auricular fibrillation. The section of Diagnosis by the Röntgen Rays has been entirely rewritten by Professor W. F. Manges. Amongst the more important laboratory tests the following have been duly noted: the macroscopic agglutination test in enteric fever; the luetin test in the diagnosis of tertiary syphilis; the Abderhalden diagnosis of pregnancy; and the complement-fixation test in the diagnosis of gonorrhœa.

In the section on Diseases of the Ductless Glands the subject of dyspituitarism and Cushing's arrangement of its clinical types have been added, and attention is called to the importance of the polyglandular syndrome. Amongst other changes we may mention that the paragraphs relating to the etiology of acute poliomyelitis have been rewritten in accordance with the results of the experimental work of Flexner and his associates at the Rockefeller Institute. These observers maintain that the causative micro-organism consists of filterable globoid bodies, measuring from 0·15 to 0·3 μ in diameter, and arranged in pairs, chains, or masses. Inoculation into the brain or the sciatic nerve and peritoneal cavity of monkeys is followed after an incubation period of 48 hours to several weeks by the clinical symptoms and pathological effects characteristic of experimental poliomyelitis.

The book as a whole is essentially of a practical nature, it contains a vast amount of information concerning clinical work, and the manner in which it is arranged renders it especially suitable for purposes of reference.

[1] THE LANCET, March 30th, 1912, p. 877.

ROYAL VICTORIA HOSPITAL, BELFAST.—At the annual meeting in connexion with this hospital, held on March 31st, the President, Lady Pirrie, in the chair, it was reported that 3189 new intern patients were received into the wards during 1915, and 29,145 new extern cases were treated. Among the ward cases were a large number of soldiers and sailors from active service. The total revenue for the year was £18,302, against £17,522 in 1914, and the disbursements £20,459, against £18,168 in the previous year, the difference being £2291. Seven of the members of the staff are serving their country at the front, two (Mr. A. Fullerton and Professor Sinclair) with the temporary rank of colonel

A MONTHLY RECORD OF ATMOSPHERIC POLLUTION.

COMMITTEE FOR THE INVESTIGATION OF ATMOSPHERIC POLLUTION:

Summary of Reports for Month ending Oct. 31st, 1915.

Place.	Rainfall in millimetres.	Metric tons of deposit per square kilometre during month.								
		Insoluble matter.			Soluble matter.		Total solids.	Included in soluble matter.		
		Tar.	Carbonaceous other than tar.	Ash.	Loss on ignition.	Ash.		Sulphate as (SO_4).	Chlorine (Cl).	Ammonia (NH_3).
ENGLAND—										
Birmingham, Central [1]	—	—	—	—	—	—	—	—	—	—
,, Aston	44	0·08	2·51	6·71	1·00	4·20	14·50	2 00	0·30	0 07
,, S.W.	49	0·04	1·00	3·06	0·80	3·50	8·40	1·70	0·20	0·50
Bolton	58	0·13	4·05	8·66	1·63	5·81	20·28	2·55	1·17	0·49
Exeter	136	0·03	1·41	1·94	1·63	4·68	9 69	3·81	0·82	0·04
Kingston-upon-Hull	23	0·17	3·83	4·73	4·06	7·57	20·36	3·21	1·27	0·02
Leicester	28	0·08	2·15	2·99	2·35	2·79	10·35	1 37	0·31	0·10
Liverpool	55	0·16	2·53	4·33	3·43	3·98	14·43	2·58	0 90	0·21
London—										
Meteorological Office	53	0·21	1·67	7·18	5·60	11·20	26·00	5·11	2·00	0·24
Embankment Gardens	29	0·55	4·57	8·60	3·30	8·77	25·79	3·48	1·04	0·04
Finsbury Park	39	0·15	1·04	3·65	0·44	6·87	12·15	1·70	0·44	0·03
Ravenscourt Park	31	0·07	1·32	3·66	1·06	4 04	10·15	1·76	0·31	0·07
Southwark Park	27	0·04	3·28	6·19	0·88	3·94	14·33	1·87	0·33	0·07
Wandsworth Common	39	0·05	0·61	1·41	0·55	3·03	5·65	1·11	0·25	0·03
Victoria Park	40	0·05	1·05	2·52	2·37	9·96	15·95	5·00	0·37	0·10
Golden Lane	55	0·05	2·84	3·42	2·42	3·74	12·47	2·89	0·51	0·33
Manchester—										
Ancoats Hospital	27	0·11	5·60	11·91	2·48	8·64	28·74	4·03	1·13	0·10
Bowdon	34	0·01	0·48	2·14	0·67	2·44	5·74	1·14	0·43	0·05
Cheadle [2]	—	—	—	—	—	—	—	—	—	—
Davyhulme	38	0·03	0·98	4·13	1·79	3·64	10·57	1·34	0·83	0·11
Fallowfield [3]	—	—	—	—	—	—	—	—	—	—
Moss-side	38	0·12	1·90	6·25	1·44	5·42	15·13	2·61	1·08	0·08
Philips Park	30	0·06	3·42	9·74	1·84	7·21	22·27	2·12	1·10	0·06
Queen's Park	32	0·10	1·92	6·50	1·42	6·71	16·65	2·03	1·25	0·04
School of Technology	30	0 18	4·73	4·75	1·38	5·13	16·17	2·16	1·05	0·06
Whitefield	36	0·06	1·61	4·95	2·29	4 80	13·71	1·90	1·03	0·05
Newcastle-on-Tyne	41	0·37	8·65	16·85	2·23	6 52	34·62	3·35	0·29	0·17
Oldham	42	0 22	7·97	16·24	3·04	5·40	32·87	2·82	1·09	0·23
York	8	0·04	1·02	1·85	0·28	0·56	3·75	0·34	0·07	0·01
SCOTLAND—										
Coatbridge	59	0·09	1·74	3·68	1·26	2·18	8·95	1·44	0·28	0·14
Greenock	80	0·23	2·89	5·06	2·70	4·34	15·01	2·11	0·16	0·19
Leith	53	0·05	1·15	3·47	1·91	3·40	9·98	1·38	0·20	0·21

[1] Results unreliable; gauge tampered with. [2] No returns. [3] No returns.

"Tar" includes all matter insoluble in water but soluble in CS_2. "Carbonaceous" includes all combustible matter insoluble in water and in CS_2. "Insoluble ash" includes all earthy matter, fuel, ash, &c. One metric ton per sq. kilometre is equivalent to: (*a*) Approx. 9lb. per acre; (*b*) 2·56 English tons per sq. mile; (*c*) one gramme per sq. metre; (*d*) 1/1000 millimetre of rainfall.

The public health authorities concerned in the supervision of these examinations were as follows: Dr. J. Robertson, Medical Officer of Health of Birmingham; Dr. J. E. Gould, Medical Officer of Health of Bolton; Mr. H. Lloyd Parry, Town Clerk, Exeter; Mr. A. R. Tankard, Public Analyst, Kingston-upon-Hull; C. K. Millard, D.Sc., Leicester; Dr. E. W. Hope, Medical Officer of Health of Liverpool; The Director of THE LANCET Laboratory, Meteorological Office, London; Mr. J. Ollis, Chief Officer, Public Control Department, London County Council, London; Dr. W. J. Howarth, Medical Officer of Health of London; Mr. W. Osborne Thorpe, Engineer, Urban District Council, Malvern; Mr. J. Warrington, Secretary, Air Pollution Advisory Board, Manchester; Dr. H. Kerr, Medical Officer of Health of Newcastle-on-Tyne; Dr. J. B. Wilkinson, Medical Officer of Health of Oldham; Professor W. P. Wynne, The University, Sheffield; Dr. E. M. Smith, Medical Officer of Health of York; Mr. A. G. Dutch, Sanitary Inspector, Coatbridge; Mr. J. Devine, Sanitary Inspector, Greenock; Mr. Thomas Bishop, Sanitary Inspector, Leith; and Mr. W. W. Kelso, Sanitary Inspector, Paisley.

The analytical work involved in these returns was undertaken respectively by J. F. Liverseege, F.I.C., Birmingham; Harry Hurst, B.Sc., F.I.C., Bolton; F. Southerden, B.Sc., F.I.C., Exeter; A. R. Tankard, F.I.C., Kingston-upon-Hull; S. F. Burford, Leicester; W. H. Roberts, M.Sc., F.I.C., Liverpool; S. A. Vasey, F.I.C., Director, THE LANCET Laboratory (London Meteorological Office collections); J. H. Coste, F.I.C. (Embankment Gardens, Finsbury Park, Ravenscourt Park, Southwark Park, Wandsworth Common, Victoria Park collections), London; F. L. Teed, D.Sc., Golden-lane, London, E.C.; C. C. Duncan, F.I.C., Malvern; E. Knecht, Ph.D., M.Sc., Manchester collections; J. T. Dunn, D.Sc., Newcastle-on-Tyne; Samuel Urmson, Oldham; Professor W. P. Wynne, Sheffield collections; S. H. Davies, M.Sc., York; Messrs. R. R. Tatlock and Thomson, Coatbridge; J. W. Biggart, F.I.C., Greenock; A. Scott Dodd, B.Sc., F.I.C., Leith and Paisley.

ATMOSPHERIC POLLUTION IN SHEFFIELD.

WE have received a copy of a report to the Health Committee of the Sheffield city council on the results obtained by the chemical investigation of rain-water collected at various sites in the city area. It is signed by Professor W. Palmer Wynne of the University, and his notes on the general scheme are of interest. The returns occur with those from other places in the monthly reports on atmospheric pollution which, as they are issued, appear regularly in our columns. Professor Wynne points out that these analytical data, in so far as they bear on the problem of atmospheric pollution, do not furnish any clue to the amount of impurity in the atmosphere, except when rain is falling. In other words, no account of the pollution during rainless days is rendered by the rain gauge, and it cannot be assumed that the impurity in the air on a rainless day is going to stay there until rain comes. However, the results are of comparative interest in relation to the amount of rainfall. In many respects, and in spite of a reputation for a smoky atmosphere, Sheffield's atmosphere, according to the report, compares not unfavourably with that of other great manufacturing centres.

CITY OF LONDON LYING-IN HOSPITAL.—At a time when the infant life of the country is a specially important asset it is satisfactory to know that there has been practically no falling off in the subscriptions to the City of London Lying-in Hospital, and that the donations have risen from £420 to £674; but we regret to learn from the report for 1915 that there has been a falling off in nearly all the other items of income. The total income amounted to £6609, being £153 less than in 1914. During the year 1100 women were admitted into the hospital, and of these 1011 were delivered, being 44 less than in the previous year, when the highest number delivered in any year—1055—was recorded. The 1011 women gave birth to 1025 children—viz., 524 boys and 501 girls. In the out-patient department 651 women were delivered at their own homes, as against 849 in 1914. Nine women had twins, 15 children were stillborn, and 10 children died.

THE LANCET.

LONDON: SATURDAY, APRIL 15, 1916.

The Wittenberg Camp.

THIS war has produced some terrible stories, and some of the most terrible, after having been declared to be unimaginable and therefore concocted, have proved to be true. To this category belongs the unspeakable record of the crimes committed by the Germans upon their prisoners of war at Wittenberg; rumours of these crimes had got abroad and were declared to be false because incredible, but the authenticated account leaves the rumours behind. The account is contained in a report by the Government Committee on the Treatment by the Enemy of British Prisoners of War; the report is signed by Mr. Justice YOUNGER, and is based upon evidence collected from prisoners of war repatriated from Wittenberg, and especially from information supplied by the following three officers of the Royal Army Medical Corps, Major PRIESTLEY, Captain VIDAL, and Captain LAUDER. The terrible episode upon which these officers gave their testimony was an epidemic of typhus fever, which broke out at the end of 1914 in the Wittenberg Camp for prisoners of war; whereupon the German staff, medical as well as military, fled from the camp, and from December, 1914, to August, 1915, no direct communication was held between the prisoners and their guards. All supplies for the wretched prisoners were for the future pushed into the camp over chutes, and the food for the hospital—and such food, and such a hospital!—was run in on a trolley over a rail worked by winches. No medical attention was provided by the staff, but in February, 1915, six English medical officers, who were prisoners, were sent to the camp to do the work which the German doctors, to their unspeakable shame, dare not do. Of these six medical men three died, and three have at last been able to tell their tale.

The story as set out in the report is a surprising record of blackguardism. The Germans confined from 15,000 to 17,000 prisoners within wire entanglements upon 10 acres of ground. A large quantity of these prisoners were Russians and were already infected with typhus fever, and the infection was spread among the other prisoners by lice, with which all the prisoners swarmed, for no washing facilities were provided and no soap was supplied. Six weeks after the vile cowardice of the German medical staff in running away from their wretched charges, six prisoner medical officers were deported to the camp, but their strenuous efforts were supported in no way by the director of the German camp. What it was humanly possible to do they did, and their efforts testify to their extraordinary courage, self-sacrifice, and resource. Of the six medical men only three survived, and we hope that their devoted services will not be forgotten. They found the improvised hospital of the camp practically without appliances of any sort. There were no proper bedding and no mattresses; dressings, bandages, and stimulants were wanting; the absence of soap prevented either patients or garments or furniture from being washed. The German authorities received representations of these things with refusal to ameliorate them, and the inhabitants of the locality came down to the encampment to laugh at the coffins as they were removed from the enclosure.

This horrible story will have been read by most of our readers, and makes it necessary that the medical men of other countries than Germany should decide into what sort of relations they propose to enter with the medical profession of Germany when this war is over. Medicine knows no geographical limits or racial distinctions; it is the most essential expression of human service to all human beings. But the doctors of other countries will not sit in friendly conclave with the medical representatives of a country where the responsibilities of human service are regarded as at Wittenberg. The doctors of other countries do not run away from disease; nor would it strike other populations that the bodies of the deserted dead were a good subject for jeers. The doctors of Germany will not for some time be welcome at international gatherings of medicine.

Credulity in War Time.

PSYCHOLOGISTS have often pointed out the antithesis which exists between emotion and intellect. A man in a passion has to a great extent lost his critical faculty; he cannot form a cool judgment; if his situation calls for action of an important character he takes the advice of his friends as to the proper course for him to pursue. A state of war is one in which powerful emotions are raised among the people; and however much we may admire the enthusiasm and driving energy thus derived, we have also from time to time to deplore the failure of calm discrimination, and to admit the readiness to believe in every kind of myth that has a pleasant effect upon the feelings. A crowd is at all times more susceptible to emotion and less endowed with critical faculties than an individual, and it is inevitable that a period of war, which knits a nation together, should also be a period of credulity. In another column will be found a communication on the psychology of rumour made by Dr. BERNARD HART to the Section of Psychiatry of the Royal Society of Medicine. Dr. HART shows that in war-time the prevalence and vitality of rumours are greatly enhanced. At the beginning of the war this truth manifested itself with surprising intensity—the passage of a Russian army through England and the appearance of the angels at Mons, are only flagrant examples of beliefs entertained by large numbers of people, not only without a scrap of reliable evidence in their favour, but in direct opposition to all that calm thought would have suggested. And as war goes on the willingness to swallow

impossible narratives and to put faith in absurd theories does not abate, while it is possible that real mischief may be done if the tendency increases.

A long article appeared recently in the *Daily Chronicle*, entitled "Supernatural Communications in War Time," written by M. MAURICE MAETERLINCK, in which that eminent and charming writer set forth the doctrine that it is possible for civilians at home to get into touch with their friends and relations fighting abroad, by some means of spiritual clairvoyance. It is, we think, singularly unfortunate that a doctrine so much calculated to raise false hopes and to culminate in disappointment and unhappiness should be published with an air of authority by a newspaper of very wide circulation, whose deservedly high reputation only serves to reinforce the error among uninformed minds. M. MAETERLINCK starts out with a statement that is simply untrue, and, indeed, he does not seem to believe his own words. He says that the existence of the faculty of clairvoyance "is no longer seriously denied by anyone who has given some little attention to metaphysics; and it is easily verified by those who will take the necessary trouble." Yet he points out that the medium finds it easier to relate the past than to foretell the future. Efforts in the latter direction appear to have failed. "Errors are almost the rule." "There is scarcely any accuracy of vision." When mediums attempt to predict a general event such as the result of a war, an epidemic, or an earthquake "they almost invariably deceive themselves and us." Moreover, even about the present their statements are not found by M. MAETERLINCK to be accurate. A medium may say that she sees the subject of inquiry "ailing slightly, lying in a deck-chair in a garden of such and such a kind, surrounded by certain flowers and petting a dog of a certain size and breed. On inquiring you will find that all these details are strictly correct, with this exception, that at that precise moment this person, who ordinarily spends his time in the garden, was inside his house or calling on a neighbour." Yet instead of writing down this medium as a fraud, M. MAETERLINCK thinks it worth while to suggest that the scene has occurred at some previous part of the individual's life. Of course it has; we must nearly all have found ourselves taking part in the identical scene at some time of our lives. Such an episode should not be presented to the public as evidence of the spiritual prowess of the medium, even if M. MAETERLINCK does not consider the medium to be condemned by the circumstance that the subject was in point of fact altogether differently engaged from the way in which clairvoyance alleged. M. MAETERLINCK tells us how the medium can give information about a British prisoner in Germany, can describe the fortress or huts in which he is interned, and the appearance of the camp; can do much, in fact, except give the name of the place. Yet this, unfortunately, is the one point that can be immediately tested. The medium tells us with the most marvellous precision all about the things which we cannot verify; she is totally nonplussed by one item, the one which would furnish us with testimony of her veracity. M. MAETERLINCK does not seem to see that she thus becomes unworthy of any notice. He offers one instance of successful clairvoyance of many that he could enumerate if the *Daily Chronicle* were the place to become communicative, the uncivil implication being that his readers could not appreciate the evidence if it was offered. Belief in fetishism he takes as the level of their intelligence, for one of M. MAETERLINCK'S most competent mediums can tell all about a person from inspecting an object which has been handled or touched by that person. The object, he presumes, absorbs like a sponge a portion of the spirit of the person who touched it, and remains in constant communication with him. This leads us straight back to the fetishism of primitive peoples. The uneducated cannot distinguish between a thing and its properties: they think that a part of a man's personality passes into his possessions. We have heard of the African native who would not walk by a river lest a crocodile should seize his shadow on the waters. We have heard of the Chinook who would not tell his name lest it should be stolen. It is very common to find objections in native tribes to being photographed, on the ground that the photographer henceforward possesses some part of the personality of the sitter. Such hopeless mental confusion is natural to the savage. But the British public can hardly have sunk to so gross a form of superstition.

Finally, M. MAETERLINCK, admitting that all which he has written sounds incredible, says that it is hardly more so than radio-activity or the Hertzian waves and other scientific phenomena. Such an argument might be made to justify any absurd folly; for is it not the case that the wonders of nature far exceed those that the most imaginative human mind can invent? Our spiritualists, by using this analogy, merely disclose the barrenness of their own minds, their ignorance of the infinite beauties and marvels of nature. If their minds really need mysteries and wonders let them study science. How ignorant of natural phenomena they must be who set up for our admiration the crude imaginings of their unwholesome minds. And the particular form of credulity which M. MAETERLINCK, a really great litterateur, has elected to advocate has a larger significance and a larger importance than that of merely misleading unfortunate persons as to the fate of their relatives fighting abroad. It is typical of that dangerous mental softness that will not face a fact, and insists upon entertaining not the beliefs that are true but the beliefs that are agreeable. To live in a fool's paradise is fatal, especially when we are at war. To know and recognise the truth, whatever it may be, is the essential attribute of a virile mind: to seek the truth is the highest task of the philosopher. How is it that a great and popular newspaper can lend its authority to M. MAETERLINCK'S rubbish? It almost seems as though it were easier to obtain prominence in our daily newspapers for the lucubrations of charlatanry than for true and useful scientific doctrines. The misfortunes of Europe have brought us back once more to medieval conditions in the realm of action. Let them not

drag us also into the barbarities of medieval thought. At this juncture in our history we have not only to act but to think like men. For there can be little doubt that in the last analysis our existence as a powerful and independent empire depends upon our readiness to accept scientific ways of thinking, to recognise and admit truth on all occasions, and to harden our minds by that intellectual discipline which is no less essential to our welfare than is physical discipline to the soldier.

Annotations.

"Ne quid nimis."

ACUTE POLIOMYELITIS.

IN another column we publish an abstract of the Lumleian lectures on acute poliomyelitis delivered before the Royal College of Physicians of London by Dr. Frederick E. Batten. The first lecture was devoted to the epidemiology and pathology of the disease, the second to the experimental researches which had been carried out, and the third to the clinical consideration of the subject. The lecturer's idea throughout was not to introduce new theories, but to discuss in a way that would be valuable, both by clearness and inclusiveness, a condition which is obscure in many of its manifestations and which has proved particularly dangerous on occasion to our troops. The clinical features were particularly well described. Dr. Batten adopted the grouping suggested by Wickman, which is based on an anatomical distribution—viz., (1) the spinal form; (2) the bulbar, pontine, and mid-brain form; (3) the cerebral form; (4) the cerebellar form; (5) the neuritic form; (6) the meningitic form; (7) the abortive form. This classification indicates the variety of symptoms which may occur. In the lectures attention was drawn to the phenomena which present themselves when different muscles are involved. One variety consists in the paralysis of the neck muscles without affection of the bulb or shoulder muscles. Dr. Batten pointed out that weakness of the neck muscles makes it impossible for the patient to walk, owing to the power of balancing being lost. The meningitic form is one of the most interesting groups, and the meningitis is indicated by the presence of lymphocytic cells in the cerebro-spinal fluid, but the symptoms frequently lead to errors in diagnosis. The remarks on treatment are well worthy of attention. Rest was particularly insisted on as the most important factor. The principles by which physiological rest can be secured to the muscles were considered, and Dr. Batten emphasised the importance of placing the paralysed muscles into the "zero position." This can be carried out by placing the paralysed limb or limbs in celluloid splints, accurately fitted to the limb. These splints were first introduced into this country by Mr. H. J. Gauvain. They are light but firm, and their efficacy in giving support to diseased joints is familiar to those who have seen them in use at Sir William Treloar's Cripples' Home at Alton. In poliomyelitis, whilst keeping the paralysed muscles in a normal zero position, other muscles which may have been more or less affected must be re-educated to resume their normal function. If this treatment is adopted at an early stage of the disease, not only will recovery be facilitated, but deformities will in a great measure be prevented. These lectures should spread the knowledge of acute poliomyelitis in a valuable way.

THE DIAGNOSIS BETWEEN POWDER EMBEDDED IN THE SKIN AND LEAD PARTICLES.

THE present trench warfare has been attended with a great many wounds due to the débris of projectiles of high velocity which are broken up on striking the parapets. When a bullet strikes a hard stone the greater part of the force is converted into heat, the lead is fused and, with the débris of the sheath, is projected in fine droplets, which the resistance of the air makes smaller and smaller. At a meeting of the Académie de Médecine of Paris M. Ducellier, radiologist of the Saint-Roch Hospital, Nice, has called attention to the importance of the resulting injuries. The particles are so small that their power of penetration is slight, and they are easily arrested by the clothes. Hence the wounds are mostly on the face or hands. They usually take the form of several small wounds surrounded by a bluish more or less circular zone according to the greater or lesser obliquity of the skin to the line of flight. The discolouration is due to penetration of the skin by small particles of lead, and these may be mistaken for powder granules. The diagnosis is important, because if the wound is in the hand the question may arise whether the soldier has injured himself voluntarily—a serious offence. The circumstances of the wounding will usually enable a correct conclusion to be drawn, but for absolute certainty it is necessary to demonstrate the nature of the particles embedded in the skin. If they are powder, a firearm has been discharged at close quarters; if lead, all possibility of voluntary mutilation is excluded. Removal of a piece of skin and chemical tests would settle the question, but this method may not be available at the front. The X rays, which are always at hand, thanks to the motor-cars equipped with the apparatus, will at once solve the problem. When the discolouration is due to powder the plate shows normal transparency of the tissues, but when the spots are clearly visible they are due to particles of the projectile. But it is necessary to take a plate and not trust to radioscopy. The screen has not the sensitiveness of the plate, and fails to show metallic particles of some size.

COMPULSORY TREATMENT OF VENEREAL DISEASE.

IN the Majority Report of the Swedish Royal Commission on Venereal Disease a scheme has been outlined with the object of rendering treatment of venereal disease compulsory under certain conditions. In this scheme these four main principles have been kept in view: 1. It must secure the sanitary objects aimed at, it must not give the public a false sense of security against the dangers of immorality, and it must not frighten patients from seeking medical treatment voluntarily. 2. It must give satisfaction morally. Thus, it must not weaken the defences against immorality or interfere with the development of public morals in the right direction. 3. It must not discriminate between the various classes of society, the greatest possible equality of treatment for the two sexes must be secured, and opportunities for arbitrary action by its administration must be reduced to a minimum. 4. It must not curtail personal liberty unnecessarily

it must not give an opening to spies and blackmailers, and it must not entail great administrative machinery or expense. On the basis of these principles measures have been proposed giving the sanitary authorities powers to make treatment compulsory for patients notified by medical men as being a source of infection, for persons convicted under the vagrancy law of professional immorality, and for persons accused of certain crimes and suspected of being infected with venereal disease. Under the present system of regulation in Sweden it is impossible to take summary measures except in the case of the professional prostitute. According to the Commission's scheme, not only would the "whole-time" prostitute be subject to compulsory treatment, but this could also be prescribed for the occasional prostitute and other women infected with venereal disease, as well as for men known to be sources of infection. It is also pointed out in this Majority Report that under the present system the syphilitic "whole-time" prostitute is kept in hospital for treatment only as long as there are infectious manifestations of the disease. According to the Commission's scheme, such a patient would be kept under observation as long as the disease was infectious, whether there were any demonstrable symptoms or not. In a Minority Report, signed by Professor Johansson and Hrr. Westerberg, compulsory measures against infectious venereal disease are described as superfluous and unjust. The signatories say that the majority's proposals entail notification of venereal disease and tracking down sources of infection, steps which they consider harmful as well as ineffective. In defence of this opinion they point out that at present many infectious patients seek medical aid voluntarily, whereas compulsory treatment would prejudice hospitals and doctors with this class of patient, who would shun them. Further, it is urged, the Commission's scheme is involved, and open to the abuses of circumlocution, mistakes of identity, and false notification. In the campaign against venereal disease compulsory measures should be directed rather against institutions such as brothels, which are perfect hot-beds of infection, than against the individual. Thus, it is evident that, as with so many other proposals by the Swedish Royal Commission on Venereal Disease,[1] this particular scheme is regarded with disfavour in certain quarters.

THE VALUE OF SCIENTIFIC DENTISTRY.

Dr. F. J. Waldo, coroner for the City of London and the Borough of Southwark, embodies a variety of matter in his annual report of inquests held by him during the past year, and his remarks on the value of scientific dentistry are very timely. The connexion between dentistry and inquests is not at first apparent, but a coroner holds inquiries upon occasions when evidence pointing to starvation gives reason to suspect an "unnatural" death, and Dr. Waldo refers in his report to examples of deaths due to lack of teeth or to the presence of septic stumps only—of death, that is to say, which might have been averted by the dentist's care and by the supply of artificial teeth. He relates also that a report of an inquest upon a case of this class, held by him, was read with a most gratifying result by Mr. Edwin Tate, who by a gift of £5000 thereupon inaugurated a fund to be administered at St. Bartholomew's Hospital for the provision of artificial teeth for necessitous and deserving out-patients. We congratulate Mr. Tate upon his generosity and the coroner upon having prompted him to set an example which we hope may be followed by others. Well-to-do persons, who so easily procure for themselves artificial teeth when those fail with which nature endowed them, do not realise that for their poorer neighbours inability to masticate their food implies not merely discomfort, but loss of health, and even in extreme cases of life itself. No doubt other hospitals would gladly profit by similar gifts to that which St. Bartholomew's Hospital has received. Although artificial teeth may be too expensive gifts for hospitals to provide for their patients out of their ordinary funds, a sum of not many hundred pounds per annum, earmarked for that purpose by their givers, would supply a substantial number of sets to patients for whom it is too late to recommend conservative measures in dentistry.

[1] THE LANCET, March 18th, 1916, p. 629.

THE CONSERVATION OF INFANT LIFE IN SCOTLAND.

THE infantile death-rate in Scotland is about the same now as it was 60 years ago. This matter of serious national importance receives attention in a report by Mr. D. W. Kemp to the Convention of the Royal Burghs of Scotland,[1] which ancient and honourable body represents two-thirds of the population. A chart, prepared by Dr. James C. Dunlop, shows a curve of the infant mortality in Scotland for the period 1855–1915. In the report is emphasised this most unsatisfactory and disappointing state of affairs, especially considering the large sums of money spent in public health, in dealing with slums and housing, the improved food and milk supplies, as well as the advances in medical and obstetrical science. Mr. Kemp adds: "But for the numerous voluntary agencies working for the welfare of infancy during the last decade, the death-rate would probably have been much higher." In the report are reproduced from THE LANCET[2] a leading article and a letter concerning the preservation of infant life. Our correspondent's idea, it will be remembered, was to enlist the active sympathies of the public, the personal interest in a particular baby being stimulated by monthly bulletins or otherwise. We trust that Mr. Kemp's report, which is to be circulated all over Scotland, will accelerate the efforts being made to reduce the deaths of infants and to promote child and maternity welfare.

POISONING BY DAFFODIL BULBS.

AT a recent meeting of the Pharmaceutical Society in Edinburgh a paper was read by Mr. W. G. McNab in which he described the uncomfortable consequences of the error of a cook who, it would seem, was sadly ignorant of the botany of the kitchen garden. Briefly, the cook, in concocting a *soupe à l'oignon*, had mistaken the bulbs of the daffodil for those of the onion, and neither the appearance of the bulbs nor her tearless eyes while preparing them for the pot told her that anything was wrong. The soup was served, and every member of the family, cook as well, experienced symptoms of nausea followed by violent vomiting

[1] Third Report on Infant Mortality in Scotland, and the Executive Meetings of the National Association for the Prevention of Infant Mortality and the Welfare of Infancy, by D W. Kemp (Assessor for Dornoch), Representative of the Royal Burghs Convention to the National Association.

[2] THE LANCET, Jan. 29th, 1916.

and diarrhœa. Thereafter on three consecutive occasions when the family had soup for dinner the same thing occurred. It was not until an investigation revealed the facts that the box in which the domestic onions were stored had long been empty and that the cook had been drawing her supplies from an adjacent box containing garden bulbs that the cause of the trouble was discovered. Judging from like experiences related in the course of the discussion which followed the reading of the paper, similar mistakes are not uncommon, and it might therefore be wise if medical practitioners called in to diagnose obscure cases of family sickness would cross-examine the cook. Daffodil bulbs contain an alkaloid the action of which, according to authorities, varies as to whether the alkaloid is extracted from the flowering bulb or from the bulb after flowering. Thus in the former case the alkaloid produces dryness of the mouth, checks cutaneous secretion, dilates the pupil of the eye, quickens the pulse, and slows and weakens the heart contractions. On the other hand, the alkaloid from the bulbs after flowering produces copious salivation, increases cutaneous secretion, contracts the pupil of the eye, produces slight relaxation of the pulse, and slight faintness and nausea. Apparently there is no record of a case of fatal poisoning from daffodil bulbs.

INFANTILE SYPHILIS: AN ANALYSIS OF 100 CASES.

Dr. B. S. Veeder and Dr. P. C. Jeans bring out some instructive points in relation to infantile syphilis in a paper in the *American Journal of Diseases of Children* for March. Of congenital syphilis they recognise four types: fœtal syphilis includes the majority of abortions and premature births due to syphilis; infantile syphilis includes cases in which the child is born apparently healthy but develops signs of syphilis within a year; late or tardy syphilis embraces those in which signs of syphilis develop after infancy; and in the latent type are grouped those children, apparently healthy, but in whom the Wassermann reaction is positive. It is with the second group only that this paper deals. These infants are taken to the medical practitioner because of either coryza or rash in the large majority of cases, occasionally for epiphysitis. Rash was present in 77 per cent., rhinitis in 74 per cent.; the two are not always associated. Epiphysitis occurred in 14 cases. The spleen was enlarged in 82, and it is stated that, where this is the case in a child under 6 months old, in absence of any exudative diathesis, syphilis is probable. In 60 the weight was below normal, but in 10 it was above. The Wassermann reaction was positive in 92·6 per cent. In 81–85 per cent. the symptoms began in the first two months. As regards prognosis, this is bad. There is a mortality of 40 per cent. in spite of all treatment. All the deaths occur in the first six months of life. It is significant that treatment appears to have no effect, though neosalvarsan given intravenously (a proceeding which seems to be well borne) into the external jugular vein causes rapid disappearance of the rhinitis. Nutrition has the greatest influence upon the chances of survival. This is strikingly brought out by a comparison of infants breast-fed and those artificially fed. Of 42 infants who were breast-fed for a period longer than three months only 3 died (7·1 per cent.), whereas of 17 breast-fed only for a month 9 died (52·9 per cent.).

A DIETETIC VIEW OF THE TAX ON AERATED WATERS.

WATER in its aerated form is clearly a luxury, and the addition of carbonic acid gas to water justifies a tax according to this view. The tax will diminish the consumption of all aerated beverages, and a return to the use of plain water will ensue. For the whole community, teetotal or otherwise, a beverage that is not carbonated, and which is therefore not taxed, will be cheaper. But the physiological action of a water briskly effervescing with carbonic acid gas is different from that of a plain water or of a water which is not effervescent, and a general return to plain water therefore raises some dietetic questions. Apart from æsthetic considerations, questions, for example, of its acid attractiveness, carbonated water exerts, according to some observers, a specific effect in the stomach. Aerated beverages in most cases promote the chemical processes of digestion by causing an earlier and more abundant secretion of gastric juice, while the carbonic acid gas may also act as a stimulant to the movements of the stomach, and thus aid the mechanical process of digestion. Possibly the effervescent action of the carbonated water causes a circulation or distribution of the food particles. In England the introduction of cheap soda-water was largely responsible for making whisky a popular alcoholic beverage, and incidentally the public were unconsciously basing their preference of aerated water to still water on the agreeable effects on digestion which in so many cases an aerated beverage produces. It is well known, moreover, that an effervescing alcoholic beverage is a more rapidly diffusible stimulant than a still fluid. It is important, however, to remember that the duty on table water is designed to apply not to the manufacture of these waters but to their sale, which means that the tax is charged separately on the quantity contained in a separate bottle, the term "bottle" including any reservoir. Premises for manufacture will require to be licensed under a fee. For domestic purposes, however, the manufacture of soda-water as in a seltzogene or similar vessel, with which most of us are familiar, will be neither taxed nor is it intended that a licence charge be imposed. The definition for "table waters" makes this clear, for they are described as "any aerated waters and any beverages sold or kept for sale in bottles other than (*a*) any liquor for retail sale of which an Excise licence is required; and (*b*) syrups or other liquors intended to be consumed in a diluted form."

THE ARMY MEDICAL CIVILIAN RESERVE.

Mr. Rickard W. Lloyd has brought to our attention a letter written by the late Mr. C. B. Keetley 11 years ago which is of considerable topical interest at the present moment. The letter was addressed to a certain number of medical men entirely upon Mr. Keetley's own responsibility, but he had assured himself that the Director-General of the Army Medical Staff (then, as now, Sir Alfred Keogh) would view with the greatest approval the formation of a Voluntary Medical Reserve. Mr. Keetley's straightforward letter is characteristic of the man.

The Director-General of the Royal Army Medical Corps has pointed out that, in the case of a great war, he would be the only member of that Corps left in the kingdom. There would be no trained Medical Reserve. There would be the Volunteer medical officers, but they would have their own

duties. Lord Roberts said on Saturday, speaking of the army in general: "There is a great deal more necessary, and that is that, in addition to the army and reserve forces, there should be a great potential reserve of the whole nation." The Director-General is most anxious to see a great potential reserve of the medical men of the nation. It seems to me that this could be furnished without any great sacrifice on anyone's part. Medical men possess medical knowledge to begin with. They have not to learn to shoot. From a soldiering point of view, therefore, a doctor is comparable to a gamekeeper, or, better still, to a Volunteer who has made rifle-shooting his hobby. All the medical man needs is instruction in the official and routine duties of a medical officer in charge of a hospital or of a body of troops. I am assured by the highest authorities that this could be given in a dozen lessons or less. No drill is required. I think that in the case of a large number of medical men who are not officers of Volunteers, that it would not ask too much of their patriotism for them to be willing to receive these lessons. All medical men who thus qualified themselves could be organised into a corps with strictly local subdivisions. *In the case of a great war no member of this corps should be expected to do army medical duties at any great distance from his own locality, or without proper payment.* No expense in uniform would be required. ..... Among the thousands of members of such a reserve medical corps there would be, when war broke out, some hundreds who would be both qualified and willing to serve abroad—in fact, to act as a reserve to the Royal Army Medical Corps abroad. Without the organisation I have indicated, and without the lessons in time of peace, these hundreds might be willing, but they would be very imperfectly qualified.

PS.—I am writing this entirely on my own responsibility, but not without first assuring myself by consultation with the highest army medical authorities that the scheme would be received with favour. The enthusiasm and energy of the present Director-General of the Royal Army Medical Corps are well known, and his intense desire to establish a proper reserve. In fact, his views with regard to the Royal Army Medical Corps are precisely those of Lord Roberts with regard to the army in general. I am sure you will agree with me that the country is fortunate in possessing such men at this juncture, and that it is our duty as individuals to second their efforts.

Mr. Herbert Chambers, writing from Goldhawk-road, Hammersmith, tells us that Mr. Keetley's letter resulted in 40 men in the Hammersmith district of London interesting themselves in the movement, who at the termination of the course had mostly obtained a rough idea of regimental officers' duties. "The Territorial scheme," he adds, "was shortly after introduced and completely smothered individual effort."

THE INFLUENCE OF COLD UPON THE TRICHINOUS LARVÆ.

PREVIOUS to the research conducted by Mr. B. H. Ransom, the author of a pamphlet dealing with this subject,[1] it had been generally accepted that the larvæ of trichinella spiralis were very resistant to cold. Extended investigation was made into the matter. Quantities of trichinous meat varying in weight from a few grammes to nearly 400 lb. were frozen and kept for periods varying from a few minutes to 57 days at various temperatures below the freezing point of water. The meat on removal from the freezer was generally allowed to thaw slowly at ordinary house temperatures. Frozen meat after thawing was artificially digested and examined microscopically on a warm stage and the number of inactive and active trichinæ were recorded. Trichinous meat from the same carcass as the frozen meat was used for controlling the effects of the process of digestion. Another portion of frozen meat, after thawing, was fed to test animals, in most cases white or hooded rats. Unfrozen meat from the same carcass was fed to control test animals. The test animals as they died, or after about a month if they lived so long, were examined for trichinæ. About 30,000 trichinæ were examined from artificially digested frozen and unfrozen meat, and over 500 test animals and control animals were fed and examined. A considerable portion of the trichinæ in meat exposed to a temperature of about 15° F. for periods of 23 days or less survive and are quite lively after thawing, but such meat frequently fails to infect test animals. Some of the trichinæ in meat exposed to a temperature of about 10° for periods of 57 days or less generally survive. A temperature of 10° is more injurious to trichinæ than a temperature of 15°, but like the latter its effects are uncertain, although meat exposed to it for 14 days or longer has generally failed to produce infestation. No infestation has been produced by trichinous meat exposed to a temperature of about 10° for 20 days or longer. Temperatures of 5° F. or lower profoundly affect the vitality of trichinæ. Only a very small proportion survive an exposure of more than five days. Artificial digestion of trichinous meat has no apparent effect upon the activity or structure of the trichinæ. In the practical application of refrigeration as a means of destroying the vitality of trichinæ meat should be refrigerated at a temperature not higher than 5°F. for not less than 20 days, a period which allows a probable margin of safety of nearly 10 days. The employment of higher temperatures of refrigeration as a means of destroying the vitality of trichinæ is not justified in the light of our present knowledge, because of the uncertainty of the effects of such temperatures. Whether temperatures higher than 5°F. may be safely employed by lengthening the period of refrigeration remains to be determined.

[1] Effects of Refrigeration upon Larvæ of Trichinella Spiralis, by B. H. Ransom, Chief of the Zoological Division, Bureau of Animal Industry, Journal of Agricultural Research, Department of Agriculture, Washington, U.S.A.

WE regret to announce the death of Sir Alexander Russell Simpson, professor of midwifery and diseases of women in the University of Edinburgh, which occurred on April 6th in Edinburgh as the result of an accident. An obituary notice will appear in a later issue.

THE death has also occurred, we are sorry to say, of Colonel Arthur E. J. Barker, A.M.S., professor of surgery and clinical surgery in University College of London, and surgeon to University College Hospital, who died while discharging military duties.

Mr. Hugh M. Rigby, M.S. Lond., F.R.C.S. Eng., has been appointed a consulting surgeon to His Majesty's Forces in France with the rank of Colonel, A.M.S.

THE library and offices of the Royal Society of Medicine will be closed from Thursday, April 20th, to Tuesday, April 25th, both days inclusive.

ROYAL INSTITUTION.—Among the day lectures to be delivered after Easter the following are announced:—Professor Charles S. Sherrington (two): Harvey and Pavloff. Dr. T. M. Lowry (two): Optical Research and Chemical Progress. Sir Ray Lankester (three): Flints and Flint Implements. Professor W. H. Bragg (two): X Rays and Crystals—(1) New Methods of Research; (2) First Results and their Applications (the Tyndall lectures). The Friday evening discourses will be resumed on May 5th. Sir J. Mackenzie Davidson: Electrical Methods in Surgical Advance. Professor Charles G. Barkla: X Rays. Mr. Ernest Clarke: Eyesight and the War.

REPORT OF THE COUNTY MEDICAL OFFICER OF HEALTH AND SCHOOL MEDICAL OFFICER OF LONDON FOR 1914.

HEALTH OF THE METROPOLIS IN WAR-TIME.

THE annual report of Dr. W. H. Hamer for the year 1914 has recently appeared.[1] A third year's experience of the policy of coördination as applied to the administration of public health and elementary education in London materially strengthens the confidence we have before expressed in the principle involved.[2] We should be prepared to advocate its extension to other communities of smaller but still sufficient size provided that suitable administrative arrangements could be secured. Careful reading of the volume before us conveys the impression that, in spite of the distracting influence of the European War, the highest possible efficiency has been maintained throughout the year in those departments of the Council with which our profession is concerned. In no respect have the interests of public health or education been sacrificed to existing emergencies.

The arrangement of subject matter adopted in the two preceding reports has been continued in the present volume, the contents of which may be indicated as follows: Part I. discusses the question of metropolitan public health generally, with particular allusion to the degree in which it has been affected by the war. Part II. gives account of the advisory action of the medical officer in his capacity as school medical officer; it also furnishes particulars of the administration of the Council as the education authority for London.

PART I.—*Public Health.*

The efficiency of sanitary administration in London must have been severely tested by the conditions of war obtaining since the autumn of 1914. On the outbreak of hostilities many of the borough medical officers of health were accepted for service in connexion with the housing and feeding of troops, the maintenance of sanitary conditions, and the adoption of precautions against disease. These services are rendered under military direction and are additional to the duties ordinarily performed by officers of a sanitary authority. It is gratifying to learn that in spite of the unprecedented conditions referred to, and notwithstanding the ever-pressing necessity of meeting exceptional demands for medical service, a satisfactory amount of preventive work has been accomplished by the sanitary authorities and their officers, central as well as local.

Vital statistics.—Movement of population.—Commenting on the vital statistics of London the medical officer again invites attention to the question of population movement as affecting the age constitution of the community. In the annual report for 1912 evidence was presented showing the persistence of a distinct outward flow from London of young married persons and their families. Again, in the report for 1913 the importance of local migration was shown, firstly by comparing London with the provinces in respect to age constitution of their population, and subsequently by similarly comparing the areas north and south of the Thames. It was further pointed out that London attracts females at the ages of 25–35 in greater numbers than males. The striking differences of the figures given accentuate the necessity of still bearing in mind the changes in age constitution of the community which exercise so marked an influence in London.[3] In particular regard should be had to the effect of these changes upon the rates of births, marriages, and deaths, as well as upon the rates of infantile mortality.

Antenatal and postnatal mortality.—In further discussing the question of loss of life among infants, the medical officer discriminates between the group of causes attributable to antenatal (or natal) conditions, including premature birth, atrophy, and marasmus on the one hand, and the group of postnatal causes constituting the large category of "general diseases" on the other. After eliminating, for specified reasons, the deaths from diarrhœa and the common infectious diseases, and dividing the last ten years into quinquennial periods, it is indicated that the prenatal group of causes shows a relative increase from 48·2 per cent. in the first period to 51·4 per cent. in the second, whilst the postnatal group shows a considerable decline throughout. A further remarkable point respecting the assignation of cause of death is this, that the death-rate from premature birth has increased from 10·3 per 1000 in 1871–5 to 18·7 in 1906–10, whilst the death-rate from atrophy and debility has correspondingly diminished. It appears doubtful, however, whether premature births are relatively more frequent now than formerly; and it is possible that the discrepancy is capable of explanation by assuming considerable changes of fashion in nomenclature. With reference to the happily persistent decline of infant mortality, it is evident that its explanation might be sought not in any local but in some common influence operating over a wide area. The effect of migration upon changes in the social status of present-day parents as compared with those of 50 years ago must certainly be regarded as influencing infantile mortality. The decline in that mortality has resulted in part from definite improvement in "environment," and in part from interchange between London and the country generally of certain elements of the population. To this latter factor almost as much importance should be attached as to the former.

Tuberculous disease: provisions for treatment.—The scheme of the Council for the treatment of tuberculosis has been approved by the Local Government Board.[4] In formulating this scheme the Council was animated by the desire to ensure the coöperation of all existing medical agencies, so as to provide that the patient's progress should be supervised from the date of his attack until the completion of treatment, and that he should receive medical care even beyond that period. An advisory board has been appointed consisting of representatives from the great hospitals, whose duty consists in securing uniformity of standard in the selection of patients for treatment—a rota of physicians being nominated by them for the examination of exceptional cases. Considerable difficulty was at first encountered in obtaining suitable residential accommodation, and that difficulty has been accentuated since the outbreak of war. But in spite of this the Council has succeeded in keeping pace with the demand, and in the case of children has prevented the accumulation of a long "waiting list." They have secured accommodation for residential treatment to the extent of 160 hospital beds, 240 beds in sanatoriums, and 150 children's beds; and negotiations have been opened with the Metropolitan Asylums Board for further accommodation in future.

Meningeal and abdominal tuberculosis: question of diagnosis.—In his annual report for 1913 the Registrar-General comments on the evidence that abdominal tuberculosis causes a relatively low mortality among children in London, whilst meningeal tuberculosis is more destructive there than elsewhere. He raises the question whether this is in accordance with fact. It is common knowledge that the mortality from abdominal tuberculosis tends to rise in years of exceptional fatality from diarrhœa, and it is credible that this may be due to the erroneous return as tuberculous of some deaths not really caused by that infection. If the deaths so certified now are not all due to tubercle, this would probably have been still oftener the case 30 years ago, which would help to account for the existing low mortality in London, where there is reason to believe that death certification is at its best. With the object of ascertaining whether any reduction of this mortality has followed the County Council's treatment of tuberculous milk Dr. Hamer has prepared an instructive diagram, from which it appears that in Manchester where action against tuberculous milk was commenced nine years previous to 1908, when similar action was initiated in London, the decline of tuberculous mortality is actually less marked than in the metropolis. This behaviour of the rates lends support to the theory that the fall experienced is mainly due to improvements in medical diagnosis and consequently in death certification. The medical officer considers it premature to ascribe the recent decline of tuberculous mortality among children to the promotion of special measures for the protection of the milk-supply against contamination.

Scarlet fever: etiological considerations.—During the year London experienced a considerable increase of scarlet fever, which formed part of a general prevalence throughout the country. The London attacks were more numerous than in

[1] King and Sons, Westminster. Pp. 156. Price 2s. 6d.
[2] THE LANCET, April 18th, 1914, p. 1137.
[3] THE LANCET, April 3rd, 1915, p. 720.
[4] See Report of the London County Council for 1913, vol. iii., pp. 226, 227.

any year since 1907. In the report for 1911, pp. 62, 63, special study was recorded of the seasonal prevalence of fleas in relation to the spread of scarlet fever, and the subject is again discussed in the present report. Respecting the etiology of this disease certain facts have been established. We know, for example, that scarlet fever is wont to exhibit major curves of prevalence in which the interval between crest and crest is from 6 to 8 years. Accordingly a wave-crest was due to appear about the year 1914, and, as a matter of fact, such a wave-crest did actually then occur. Many years ago Dr. G. B. Longstaff pointed out that scarlet fever displays a remarkable inverse correlation with rainfall—dry years, and particularly cycles of dry years, corresponding to cycles of excessive incidence of this disease. The subject is still under official consideration. Whilst admitting that the curves of scarlet fever and flea prevalence tend to rise from a low level at the beginning of a six-year period to a high level at its end, Dr. Hamer deprecates the formation of a precise conclusion until the results can be examined for a longer series of years.

Typhoid fever: changes of nomenclature.—Early in 1914 a "heightened prevalence" of typhoid fever was reported in London. The increase was limited to the spring, and it is noteworthy that there was practically complete absence of the usual rise in the autumn of that year. A somewhat wide distribution of attacks was revealed by inquiry, which once more gave rise to suspicion that food infection was the cause of mischief. Information was collected respecting 400 out of 789 attacks notified, from which it appears that in nearly half the cases infection was conveyed by means of fish or molluscs, coming from distant polluted foreshores or from remote estuarial waters. Criticising certain of the latest theories of causation advanced by Koch and his opponents, Dr. Hamer points out in what respects they severally fail to account for the recent spread of typhoid. The history of the disease in London indicates that typhoid particularly affects that section of the population which buys and eats what has been termed "trash" in the streets. Sometimes purchasers of "haporths" of fried fish, sometimes eaters of mussels, more rarely of cockles, are chiefly affected. On the outbreak of hostilities fears were expressed lest London should be infected by soldiers or refugees coming from the seat of war. That these fears were groundless has been proved by subsequent experience. While the low rate of typhoid fever incidence in London is highly satisfactory, it is probable that to some extent this is due to alterations in nomenclature. It is noteworthy that during the last 14 years in which deaths from appendicitis have been separately tabulated, the mortality from that disease has steadily increased, and at present the deaths thus certified are three times as numerous as those from typhoid fever. The fact is important, in this connexion, that the cases notified as typhoid in recent years are by no means always examples of that disease. The Metropolitan Asylums Board reports show that the proportion of cases erroneously certified before admission as typhoid has never been lower than 17 per cent., whilst in three recent years it has varied from 37·9 to 40·5. There can be no doubt, therefore, that considerable alteration of fashion has taken place as regards nomenclature in the case of typhoid-like diseases. If due allowance be made for this fact the estimate of the extent of the decline accredited to typhoid fever in London will have to be somewhat modified.

Cerebro-spinal fever and influenza.—The number of cases of cerebro-spinal meningitis notified in 1914 was the lowest on record. Of the 73 cases reported only 61 could be regarded as definitely due to that disease. In the same period 58 deaths were registered as from cerebro-spinal or post-basic meningitis, including a number of fatal cases that were not certified as such until after death. In 1907 an outburst of cerebro-spinal meningitis occurred in Glasgow in the course of which 1238 cases with 838 deaths were reported, whilst in Belfast some 725 cases with 548 deaths were recorded during the 18 months ended June, 1908. Sporadic cases of cerebro-spinal meningitis appear at certain seasons of each year in all large communities, and this endemic form when occurring in young persons is usually designated post-basal meningitis. In regard to infectivity and severity, the features of this type of the disease differ materially from those of the epidemic variety. The epidemic prevalence of the disease occurs in waves of varying intensity, and is governed by a complexity of conditions as yet imperfectly understood. During the previous seven years cerebro-spinal meningitis had not assumed epidemic proportions, but towards the end of 1914 cases were reported from various parts of the country, and in the early months of the following year the disease may be said to have assumed an almost epidemic character in London. Evidence of the increasing prevalence of the disease was primarily derived from the Naval Depôt at the Crystal Palace. During the first ten months of 1914 only scattered cases of cerebro-spinal meningitis were notified in London; then at the end of the year came an outburst of influenza with pneumonic complications, and close on its heels the prevalence of cerebro-spinal fever. With a view of throwing light on the possible relationship between these two conditions the services of the borough medical officers of health were enlisted. As a result of their investigations it appears that during the period from Jan. 1st to May 22nd, 1915, when influenza was prevalent, 523 cases of cerebro-spinal fever were notified. Among 462 of these cases there was a history of influenza in 37 instances, and in 27 of these the patient was said to have suffered from influenza within a week of the onset of cerebro-spinal fever. Catarrh, sore throat, and "colds" were noted as having affected 70 patients prior to attack by cerebro-spinal fever, and 10 patients had recently suffered from pneumonia. Contact with cases of influenza colds was noted in 66 instances. Dr. Hamer next proceeds to examine the main question, whether the number of cases of cerebro-spinal fever giving a history of recent attack by, or contact with, influenza was greater than might have been expected as a matter of chance. His provisional conclusion is that some definite relation probably exists between the two diseases. "This presumption" is, in his opinion, "materially strengthened when regard is paid to the large number of cases of cerebro-spinal fever giving a history of contact with sufferers from influenza."

(To be concluded.)

THE SERVICES.

ROYAL ARMY MEDICAL CORPS.

THE undermentioned Majors to be temporary Lieutenant-Colonels whilst commanding Casualty Clearing Stations:—W. D. C. Kelly and D. L. Harding, D S.O.

The undermentioned are granted temporary rank whilst commanding Field Ambulances:—To be Lieutenant-Colonel: Brevet Lieutenant-Colonel FitzG. G. FitzGerald, Major B. F. Wingate, Major M. F. Grant, Major G. A. K. H. Reed, Major G. H. Richard, and Major J. Fairbairn. To be Major: Captain V. T. Carruthers.

Major (temporary Lieutenant-Colonel) T. S. Dudding relinquishes his temporary rank on ceasing to command a field ambulance.

Major (temporary Lieutenant-Colonel) William M. B. Sparkes relinquishes his temporary rank on vacating the appointment of Assistant Director of Medical Services of a Division.

Temporary Major E. W. H. Groves, Captain, R.A.M.C. (T.F.), relinquishes his temporary commission.

Temporary Major A. Lingard to be temporary Lieutenant-Colonel.

Captain W. R. O'Farrell is restored to the establishment.

To be temporary Captains: H. B. Maunsell, J. R. Currie, and A. P. Chown (C.A.M.C.).

The undermentioned temporary Lieutenants to be temporary Captains: E. S. Moorhead, A. Riley, H. A. Haig, A. W. Matthew, H. T. L. Roberts, A. M. Pryce, F. W. Wesley, G. A. Birnie, W. C. C. Kirkwood, J. H. Wilkinson, E. H. Rainey, J. A. D. Radcliffe, L. D. Shaw, W. W. Scott, A. J. A. Peters, T. G. Brown, R. Slaney, C. F. Drew, W. T. Smith, A. MacKintosh, T. Ferguson, C. J. Scholtz, B. W. Gonin, O. S. Kellett, W. E. P. Phillips, F. S. Turner, M. J. Fraser, H. Owen, H. R. Brown, J. R. Mitchell, H. Dyer, W. A. Rees, E. Rogerson, R. B. Lucas, W. H. Godby, N. E. Packer, C. O. Donovan, R. B. Carter, E. P. Blashki, J. L. Digby, N. Mc. A. Gregg, N. W. Broughton, S. W. G. Ratcliff, C. Farranridge, A. W. Raymond, W. H. Allen, T. J. J. Curran, F. A. L'Estrange, H. Dudley, J. M. McLachlan, H. R. Souper, C. Burnham, H. E. Clutterbuck, S. Williams, R. E. F. Pearse, W. N. Soden, J. W. Robertson, N. Smith, J. B. Hunter, A. Renshaw, H. J. Penny, J. J. O'Neill, B. W. Wibberley, P. P. Noble, G. R. Pennant, T. W. David, G. W. Parry, A. R. Gunn, A. R. Finn, R. S. Morshead, G. M. C. Powell, G. W. FitzHenry, T. H. Whittington, C. O'Brien, and W. Garton.

The undermentioned temporary Honorary Lieutenants to be Temporary Lieutenants: W. H. Marshall and E. I, Davies.

The undermentioned to be temporary Lieutenants: G. E. Dodson, W. J. May, G. B. King, J. N. Glaister, W. A. Curry, D. S. Taylor, V. Wallace, W. J. Tulloch, C. J. McCarthy, C. Cairnie, W. K. Bell, C. V. Kebbell, R. Orr, C. M. Eadie, D. Rees, and W. F. Cornwall.

The undermentioned temporary Lieutenants relinquish their commissions: L. R. G. de Glanville, H. S. Vivian, C. R. Wright, J. W. Farrar, D. F. Finlay, L. B. Daly, T. C. Last, R. N. Thomson, J. R. Wortabet, H. H. R. Bayley, L. W. K. Scargill, A. E. Goldie, N. D. Mackay, E. H. Kenny, K. G. Colquhoun, C. T. Stephen, H. C. Colville, A. Pryde, F. W. Harrowell, S. Caplan, P. A. M. Green, J. A. Brown, H. J. Moon, L. M. Piggott, and E. Greene.

SPECIAL RESERVE OF OFFICERS.

Royal Army Medical Corps.

Cadet Sergeant-Major G. Morris and Cadet Sergeant J. A. Crawford, Edinburgh University Contingent Officers Training Corps, to be Lieutenants (on probation).

Temporary Lieutenant O. D. Price, from the Royal Army Medical Corps, to be Lieutenant. Ex-Cadet Sergeant E. W. Mann, Belfast University Contingent, Officers Training Corps, to be Lieutenant (on probation).

TERRITORIAL FORCE.

Army Medical Service.

Lieutenant-Colonel A. D. Sharp, from West Riding Field Ambulance, to be Assistant Director, Medical Services, West Riding Division, with the temporary rank of Colonel.

Lieutenant-Colonel D. Smart, from the Sanitary Service, to be Assistant Director, Medical Services, West Lancs. Division, with the temporary rank of Colonel.

Lieutenant-Colonel L. J. Blandford, from the Sanitary Service, to be Assistant Director, Medical Services, 1st Mounted Division, with the temporary rank of Colonel.

Royal Army Medical Corps.

London Sanitary Company: Lieutenant A. M. Brown to be Captain. D. J. Peebles to be Lieutenant.

South Midland Casualty Clearing Station: Captain E. Whichells, from South Midland Field Ambulance, to be Captain.

South Wales Mounted Brigade Field Ambulance: J. O. Cuthbertson to be Lieutenant.

Northumbrian Field Ambulance: V. J. White to be Lieutenant.

Southern General Hospital: The undermentioned Majors to be Lieutenant-Colonels: W. Collier and R. H. A. Whitelocke. The undermentioned Captains to be Majors: E. C. Bevers, H. E. Counsell, J. C. R. Freeborn, A. G. Gibson, W. J. Turrell, and A. T. Waterhouse.

Attached to Units other than Medical Units.—Captain J. C. Denvir, from Yorks Mounted Brigade Field Ambulance, to be Captain. J. S. Hopwood to be Lieutenant.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

In the 96 English and Welsh towns with populations exceeding 50,000 persons at the last Census, 8486 births and 5868 deaths were registered during the week ended Saturday, April 8th. The annual rate of mortality in these towns, which in the three preceding weeks had been 18·7, 17·2, and 17·7 per 1000 of their aggregate civil population in 1915, was again 17·7 per 1000 in the week under notice. Among the several towns the death-rate ranged from 5·1 in Enfield, 7·5 in Southend-on-Sea, 7·7 in Ilford, 7·9 in Smethwick, and 9·1 in Willesden and in Tottenham, to 23·8 in Hull, 26·1 in Cambridge, 27·6 in Rochdale, 27·8 in Burnley, and 31·3 in Sunderland.

The 5868 deaths from all causes were 9 fewer than in the previous week, and included 381 which were referred to the principal epidemic diseases, against numbers rising from 345 to 420 in the four preceding weeks. Of these 381 deaths, 141 resulted from whooping-cough, 121 from measles, 50 from infantile diarrhœal diseases, 45 from diphtheria, 15 from scarlet fever, 8 from enteric fever, and 1 from small-pox. The annual death-rate from these diseases was equal to 1·1, or 0·2 per 1000 less than that recorded in the previous week. The deaths attributed to whooping-cough, which had been 93, 137, and 134 in the three preceding weeks, rose to 141, and caused the highest annual death-rates of 1·3 in Birmingham and in Manchester, 1·4 in Warrington and in Sunderland, 1·5 in Burnley, 1·9 in Cambridge, and 2·0 in York. The deaths referred to measles, which had been 127, 115, and 122 in the three preceding weeks, numbered 121 in the week under notice; the highest death-rates from this cause were 2·8 in Swansea, 3·9 in Newport (Mon.), and 7·5 in Rochdale. The fatal cases of diarrhœa and enteritis (among infants under 2 years), which had been 68, 65, and 66 in the three preceding weeks, fell to 50, and included 16 in London, 7 in Manchester, and 3 in Nottingham. The deaths attributed to diphtheria, which had been 61, 53, and 71 in the three preceding weeks, fell to 45, of which 12 occurred in London, 4 in Liverpool, and 3 each in West Ham, Bootle, and St. Helens. The deaths referred to scarlet fever, which had been 19, 12, and 20 in the three preceding weeks, fell to 15, and included 2 each in London, Stockport, and Leeds. The 8 deaths from enteric fever, of which 2 were registered in Hull, were slightly below the weekly average in the last quarter. The fatal case of small-pox belonged to South Shields.

The number of scarlet fever patients under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, which had steadily declined from 2257 to 1768 in the 11 preceding weeks, rose to 1778 on Saturday last; 252 new cases were admitted during the week, against 193, 210, and 214 in the three preceding weeks. These hospitals also contained on Saturday last 1425 cases of diphtheria, 243 of whooping-cough, 132 of measles, and 42 of enteric fever, but not one of small-pox. The 1481 deaths from all causes in London were 16 in excess of the number in the previous week, and corresponded to an annual death-rate of 17·9 per 1000 of the civil population. The deaths referred to diseases of the respiratory system, which had been 405, 337, and 328 in the three preceding weeks, further fell to 326 in the week under notice.

Of the 5868 deaths from all causes in the 96 towns, 194 resulted from violence, 458 were the subject of coroners' inquests, and 1673 occurred in public institutions. The causes of 60, or 1·0 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest. All the causes of death were duly certified in Leeds, Bristol, West Ham, Bradford, Newcastle-on-Tyne, and in 69 other smaller towns. Of the 60 uncertified causes, 12 were registered in Liverpool, 11 in Birmingham, 5 in South Shields, 4 each in Gateshead and Tynemouth, and 3 each in London and Manchester.

HEALTH OF SCOTCH TOWNS.

In the 16 largest Scotch towns with an aggregate population estimated at 2,372,000 persons at the middle of last year, 1140 births and 890 deaths were registered during the week ended Saturday, April 1st. The annual rate of mortality in these towns, which had been 18·7, 20·7, and 19·9 per 1000 in the three preceding weeks, fell to 19·6 per 1000 in the week under notice. During the 13 weeks of last quarter the mean annual death-rate in these towns averaged 16·7, against a corresponding rate of 15·7 per 1000 in the large English towns. The death-rate during the week ranged from 6·2 in Ayr, 6·9 in Clydebank, and 12·0 in Hamilton, to 24·7 in Paisley, 25·2 in Kilmarnock, and 30·9 in Greenock.

The 890 deaths from all causes were 13 fewer than the number in the previous week, and included 93 which were referred to the principal epidemic diseases, against 89 and 82 in the two preceding weeks. Of these 96 deaths, 52 resulted from measles, 18 from infantile diarrhœal diseases, 8 each from diphtheria and whooping-cough, 7 from scarlet fever, and 3 from enteric fever, but not one from small-pox. The death-rate from these diseases was equal to 2·1, against 1·3 per 1000 in the large English towns. The deaths attributed to measles, which had increased from 23 to 43 in the four preceding weeks, further rose to 52, and comprised 30 in Glasgow, 6 in Kilmarnock, 4 each in Paisley and Coatbridge, 3 each in Edinburgh and Dundee, and 2 in Greenock. The deaths of infants (under 2 years) from diarrhœa and enteritis, which had been 8, 11, and 12 in the three preceding weeks, further rose to 18, and included 7 in Glasgow, 3 in Dundee, and 2 each in Paisley and Greenock. The fatal cases of diphtheria, which had been 7, 16, and 15 in the three preceding weeks, fell to 8, and included 2 each in Glasgow and Aberdeen. The 8 deaths from whooping-cough were 4 in excess of the average in the earlier weeks of the quarter, and comprised 3 in Glasgow, 2 each in Aberdeen and Paisley, and 1 in Kirkcaldy. The deaths referred to scarlet fever, which had been 6, 12, and 8 in the three preceding weeks, numbered 7, and included 2 each in Glasgow and Greenock. Of the 3 fatal cases of enteric fever, 2 were registered in Glasgow and 1 in Greenock.

The deaths referred to diseases of the respiratory system, which had steadily increased from 88 to 212 in the six preceding weeks, fell to 189 in the week under notice, but were 37 above the number registered in the corresponding week of last year. The deaths from violence numbered 24, against 26 and 29 in the two preceding weeks.

HEALTH OF IRISH TOWNS.

In the 19 town districts of Ireland with populations exceeding 10,000 persons at the last Census, 688 births and 572 deaths were registered during the week ended Saturday,

April 1st. The annual rate of mortality in these towns, which had been 24·5, 21·3, and 24·3 per 1000 in the three preceding weeks, rose in the week under notice to 26·0 per 1000 of their aggregate population, estimated at 1,148,468 persons at the middle of last year. During the 13 weeks of last quarter the mean annual death-rate in these towns averaged 20·6, against corresponding rates of 15·7 and 16·7 per 1000 in the English and Scotch towns respectively. During the week the death-rate was equal to 26·9 in Dublin (against 16·9 in London and 20·7 in Glasgow), 23·0 in Belfast, 33·3 in Cork, 20·2 in Londonderry, 32·5 in Limerick, and 20·9 in Waterford, while in the 13 smaller towns the mean rate was 28·4 per 1000.

The 572 deaths from all causes were 37 in excess of the number in the previous week, and included 47 which were referred to the principal epidemic diseases, against 38 and 45 in the two preceding weeks. Of these 47 deaths, 18 resulted from measles, 13 from whooping-cough, 8 from infantile diarrhœal diseases, 5 from diphtheria, 2 from scarlet fever, and 1 from enteric fever, but not one from small-pox. The death-rate from these diseases was equal to 2·1, against corresponding rates of 1·3 and 2·1 per 1000 in the English and Scotch towns respectively. The deaths attributed to measles, which had been 18, 16, and 18 in the three preceding weeks, were again 18 in the week under notice, and comprised 13 in Belfast, 4 in Dublin, and 1 in Londonderry. The deaths referred to whooping-cough, which had been 10, 8, and 15 in the three preceding weeks, fell to 13, of which 5 occurred in Dublin and 4 in Belfast. The fatal cases of diarrhœa and enteritis (among infants under 2 years), which had been 13, 10, and 5 in the three preceding weeks, rose to 8, and comprised 5 in Dublin, 2 in Belfast, and 1 in Clonmel. The 5 deaths attributed to diphtheria, of which 3 were registered in Belfast, were 2 in excess of the average in the earlier weeks of the quarter. The deaths from scarlet fever were recorded in Belfast and Cork, and that from enteric fever in Dublin.

The deaths referred to diseases of the respiratory system, which had been 124, 117, and 134 in the three preceding weeks, rose to 142 in the week under notice, and were 23 above the number registered in the corresponding week of last year. Of the 572 deaths from all causes, 171, or 30 per cent., occurred in public institutions, and 12 resulted from violence. The causes of 23, or 4·0 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest, and included 7 in Limerick and 5 each in Dublin and Galway; in the large English towns the proportion of uncertified causes did not exceed 1·0 per cent.

In the 19 town districts of Ireland with populations exceeding 10,000 persons at the last Census, 515 births and 474 deaths were registered during the week ended Saturday, April 8th. The annual rate of mortality in these towns, which had been 21·3, 24·3, and 26·0 per 1000 in the three preceding weeks, declined to 21·5 per 1000 in the week under notice. The death-rate was equal to 22·6 in Dublin (against 17·9 in London and 21·7 in Glasgow), 19·1 in Belfast, 20·4 in Cork, 22·8 in Londonderry, 31·1 in Limerick, and 32·3 in Waterford, while in the 13 smaller towns the mean rate was 20·8 per 1000.

The 474 deaths from all causes were 98 fewer than in the previous week, and included 41 which were referred to the principal epidemic diseases, against 45 and 47 in the two preceding weeks. Of these 41 deaths, 16 resulted from whooping-cough, 13 from measles, 8 from infantile diarrhœal diseases, 2 from scarlet fever, and 1 each from enteric fever and diphtheria, but not one from small-pox. The death-rate from these diseases was equal to 1·9, against 1·1 per 1000 in the large English towns. The deaths attributed to whooping-cough, which had been 8, 15, and 13 in the three preceding weeks, rose to 16, and included 7 in Belfast, 3 in Limerick, and 2 each in Dublin and Cork. The deaths referred to measles, which had been 16, 18, and 18 in the three preceding weeks, fell to 13, and comprised 8 in Belfast, 4 in Dublin, and 1 in Newry. The fatal cases of diarrhœa and enteritis (among infants under 2 years), which had been 10, 5, and 8 in the three preceding weeks, were again 8 in the week under notice, and comprised 5 in Dublin, 2 in Belfast, and 1 in Londonderry. The deaths from scarlet fever were registered in Belfast and Cork, and that from enteric fever in Belfast, and the fatal case of diphtheria in Dublin.

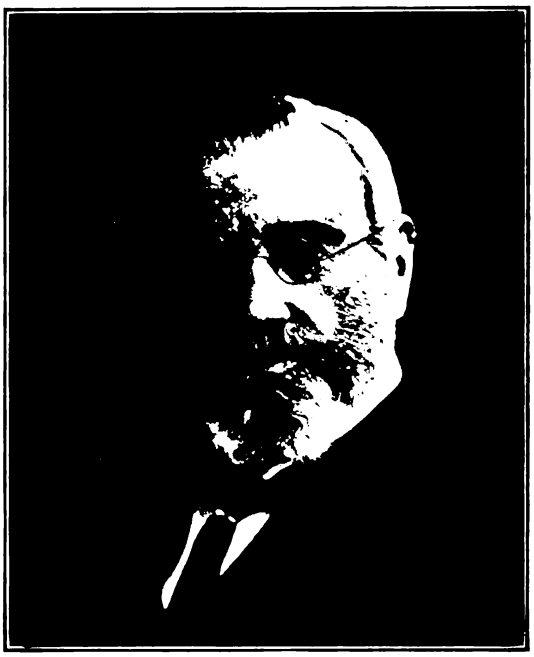
The deaths referred to diseases of the respiratory system, which had been 117, 134, and 142 in the three preceding weeks, fell to 120 in the week under notice, and were 35 below the number registered in the corresponding week of last year. Of the 474 deaths from all causes, 155, or 33 per cent., occurred in public institutions, and 12 resulted from violence. The causes of 13, or 2·7 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest, and included 5 in Dublin and 3 in Belfast, and 2 in Sligo; in the large English towns the proportion of uncertified causes did not exceed 1·0 per cent.

Obituary.

SIR THOMAS BOOR CROSBY, M.D. ST. AND., F.R.C.S. ENG., J.P., LL.D. ST. AND. & DUB.,

LATE LORD MAYOR OF LONDON.

WE regret to announce the death of Sir Thomas Boor Crosby, which took place on April 7th, after a brief illness, in his eighty-sixth year. Born at Gosperton, near Spalding, Lincolnshire, in 1830, the son of a farmer, he was educated in London, at University College School, and University College, and subsequently became a medical student at St. Thomas's Hospital. After obtaining the Licentiateship of the Society of Apothecaries of London and the Membership of the Royal College of Surgeons of England in 1852, having been demonstrator of anatomy in his medical school, he started in practice by joining an old-established firm of practitioners in Fenchurch-street. At that time the City of London was more of a residential quarter than it is to-day, and the firm to which he belonged had a busy practice among many leading City families. At a later period Dr. Crosby took up his residence in Finsbury, a recognised medical district less than 50 years ago. There he enjoyed a large practice, and there quite recently he described himself



SIR THOMAS BOOR CROSBY.

as being "still in harness." In 1860 he took the Fellowship of his College by examination, and in 1862 he graduated as Doctor of Medicine at the University of St. Andrews.

His connexion with municipal affairs dates back to 1877, in which year he was elected a Common Councillor of the City of London. He became Alderman for the Langbourne Ward, and 30 years later he served as Sheriff. During his year of office as Sheriff he paid, with other representatives of the Corporation, a visit to Berlin as the guest of the Berlin municipality, and in the same year he was knighted. In 1911, being the senior alderman below the chair, he was elected Lord Mayor of the City of London. He was then 82 years of age, and the choice of the City gave him the double distinction of being the first medical man to occupy the civic chair in the metropolis, and of being the oldest citizen who had ever undertaken the responsibilities of the Lord Mayor of London. In carrying out the duties of his office Sir Thomas Crosby was most conscientious and untiring, being ably assisted by his daughter as Lady Mayoress. During his mayoralty two events of outstanding importance occurred—namely, the appalling disaster to the *Titanic* and a coal strike which threatened to assume the dimensions of a national disaster. For the sufferers by the

foundering of the great White Star liner Sir Thomas Crosby raised £450,000 by a Mansion House Fund. When the coal strike was at a critical stage he convened a meeting of Lord Mayors, Mayors, and Provosts from all over the country at a few hours' notice, and the resulting intention on the part of the municipalities to take concerted action against impending danger did much to relieve the stress of a dangerous social situation. On retiring from the position of Lord Mayor the vote of thanks accorded to him in Common Hall was especially cordial, as it was recognised that he had used his civic position with great promptitude in the public cause.

In private life Sir Thomas Crosby was a shrewd, witty, kind, homely man, and his success was the outcome of persistent habits of hard work and self-restraint. He had no great learning, but he was an admirable magistrate, whose decisions were informed throughout with that real knowledge of the life of the people which the successful and industrious general practitioner cannot fail to possess. The distinctions bestowed upon him were many. He was an Officer of the Legion of Honour and possessed the Orders of the Crown (Germany), St. Olaf (Norway), Dannebrog (Denmark), and the Rising Sun (Japan). He was also LL.D. of Dublin and St. Andrews, a J.P. for the City of London as well as for the County of London, and a member of the Senate of London University.

TOM BATES, L.R.C.P. & S. EDIN., M.R.C.S. ENG.,

CONSULTING SURGEON TO THE WORCESTER GENERAL INFIRMARY.

Mr. Tom Bates, the well-known Worcester surgeon, died at his residence, Foregate-street, Worcester, after a brief illness on April 3rd, having just completed 50 years of medical practice.

Mr. Bates was a native of March, Cambridgeshire, and after studying medicine at Edinburgh, Glasgow, and Paris, took the Edinburgh double qualification in 1866, becoming a Member of the Royal College of Surgeons of England two years later. At the Glasgow Royal Infirmary he had the advantage of being a dresser to Lord Lister at a time when that distinguished surgeon was introducing the antiseptic methods of surgery a—fact which Mr. Bates recalled a few weeks ago in our columns, when he sent us for publication a letter which Lister had written to him in 1893 in reference to a case of tuberculous elbow. After acting as house surgeon at the Royal Infirmary, Glasgow, and holding other appointments at the Glasgow Lying-in Hospital and the Glasgow Lock Hospital, Bates went to Worcester, where he soon acquired a wide reputation as a surgeon and obtained a large practice in the neighbourhood. In 1879 he was appointed honorary surgeon to the Worcester General Infirmary, and worked assiduously for 30 years in the interests of that institution. Elected honorary consulting surgeon in 1909, he continued to work ungrudgingly for the infirmary, and two years ago, at the age of 70, and when he was on the eve of retiring into private life, he volunteered to act as resident house surgeon, the circumstances of the war having made it difficult to obtain house officers. His confrères in Worcester would not allow him to make the sacrifice, and the responsibility was shared among them. He was also keenly interested in the work of the Worcester Ophthalmic Hospital, to which hospital he was honorary surgeon for nearly 40 years. When the continuance of the war made the shortage of medical men severely felt, he again offered his services as resident in the infirmary, although he had by this time definitely retired from practice. Later he resumed active work when first one and then the other of the two sons who had taken his place in the practice accepted commissions in the Royal Army Medical Corps. He died, therefore, in the discharge of the duties that he loved and understood so well. In addition to the two sons, he leaves a widow and two daughters to mourn their loss.

He was buried at Astwood on April 7th, the coffin-plate being the name-plate from his house door bearing the simple words, "Mr. Bates, Surgeon."

THE LATE MARY CHARLOTTE MURDOCH.

WITH reference to the obituary of Miss M. C. Murdoch, which was published in THE LANCET of April 1st, a correspondent writes as follows:—"To those of us who knew Dr. Mary Murdoch intimately, to those who knew her as a great physician, or as a fearless reformer, a good public speaker and leader, or as a generous-hearted friend, it was not surprising that her passing was the occasion of a wonderful public tribute to her life and work. Thousands of the inhabitants of the city of Hull followed her to her last resting-place; friends and colleagues from many parts of England, representatives from many societies and associations and philanthropic institutions, as well as her townspeople, high and low, flocked to do her honour. Her life and work in the practice of her profession has for many years past been an inspiration to many. She had that extraordinary love of little children which one often finds in very strong characters. It was an education in itself to do the hospital 'round' with her and see the real delight of the little patients and the greeting they gave her when she came into the ward, the sound clinical work, the instruction to her house surgeons, and the amount of original work done; for she did some valuable scientific research, more especially in the field of pericarditis, and the vaccine treatment of many diseases. She was essentially a clinician of the first water, a good diagnostician, with a remarkable power of pulling her patient round again. Her life was a life of devotion and utter self-sacrifice. As a doctor she knew no rest. Nothing was a trouble to her where her patient was concerned, and she had a wonderful way of cheering and bestowing comfort and bringing gladness wherever she went. Her loyalty towards her colleagues, her generous help to those in trouble or want, her radiant personality, her spirit of adventure, and her championship of all righteous causes will make her live in the memory of many as a great physician who will be greatly missed."

Correspondence.

"Audi alteram partem."

THE PREVENTION OF BILHARZIA INFECTION.

To the Editor of THE LANCET.

SIR,—There are several means of preventing the spread of bilharziosis amongst civilians, and more especially amongst troops now on active service. Up till recently, South African practitioners advised persons to avoid swimming in those rivers and pools which were known to be associated with the disease. The filtering of the town supply of fresh water has been attended with a marked diminution of the number of cases of bilharziosis in some towns; but the removal of the intermediary hosts from places where they are exposed to infection or are likely to cause infection has not received the attention it deserves. There is a significant distribution of one form of fresh-water snail in Natal. This snail could well be removed from certain parts of the country where bathing is indulged in. So far we have no reason to suppose that these snails are a danger to the community until they have come into contact with urine passed by a person suffering from bilharziosis. There is reason to suppose that infected persons such as coolies and others may infect a river at its source, that these snails which abound on the rushes lower down stream become a source of danger to the water-supply within a month or six weeks, and that healthy persons who make use of this river water for drinking or bathing purposes during the next day or two are liable to contract the disease.

Certain snails have been proved to act as intermediary hosts for Asiatic schistosomiasis in China and Japan. The Bilharzia Mission to Egypt in 1914 demonstrated that several varieties of fresh-water snails could act as intermediary hosts for the Egyptian form of the disease. I have found a dark sinistral snail, Physopsis africana, abounding in several of the bathing-places in Natal which are known to be associated with bilharzia infection. These snails were particularly abundant in three places where the infection is believed to be particularly severe. This common fresh-water snail has been found to harbour two different species of cercariæ presenting forked tails here in Natal. From this I infer that this species of snail may act as an intermediary host for bilharziosis in South Africa.

I am, Sir, yours faithfully,

F. G. CAWSTON, M.B., B.C. Cantab.

Maritzburg, Natal, March 3rd, 1916.

THE OPERATIVE TREATMENT OF OSTEO-ARTHRITIS.

To the Editor of THE LANCET.

SIR,—While fully appreciating the complimentary references to my operative work in connexion with cases of osteo-arthritis, my attention has been drawn to an injustice to Mr. Sampson Handley which your annotation in THE LANCET of April 1st inadvertently suggests. My case, to which you so kindly refer, was admittedly the first of the kind, but Mr. Handley, working independently, was the first to publish his results, and he also was responsible for the term "cheilotomy." Mr. Handley published his operative experiences on this subject in the *British Medical Journal* of May 3rd, 1913. My case, although operated upon three months before Mr. Handley's first case, was not published until a week later (May 10th) in the same journal.

I intend to send you a further communication with X ray photographs illustrating the operative procedures required in the treatment of osteo-arthritis, and will then be able, if you will kindly permit me, to fill in the gaps to which THE LANCET refers.—I am, Sir, yours faithfully,

Dublin, April 7th, 1916. W. I. DE C. WHEELER.

ANÆSTHESIA FOR ENUCLEATION OF TONSILS.

To the Editor of THE LANCET.

SIR,—In THE LANCET of April 8th Dr. J. Blomfield advocates the use of ether for the above operation. No doubt in the hands of a general practitioner it is the safest anæsthetic, but the results, to my mind, are not to be compared with those obtained by the use of chloroform and oxygen. Addition of the latter lessens the risk, and I have used this combination in over 1000 cases successfully. All patients over the age of 16 have a preliminary hypodermic injection of morphine and atropine. Anæsthesia is induced very gradually with chloroform dropped on to a mask with one layer of flannel; as soon as the patient is just under, a mouth prop is fixed in position and warmed oxygen is passed through chloroform and thence to a pipe fixed to the mouth prop This usually suffices to keep the patient under with no faucial straining for half an hour or more, though occasionally it is necessary to use the mask for a few minutes after the removal of one tonsil. The advantages over ether are: no congestion, less tendency to vomiting, more agreeable odour, and the patient comes round rapidly. It is easy with practice to keep the patient in the ideal stage—that is, deep enough to avoid faucial straining and light enough to enable the cough reflex to be recovered in a few seconds.

I am, Sir, yours faithfully,

HUGH R. PHILLIPS, M.D. Edin.,
Senior Anæsthetist, Italian Hospital, &c.

Dawson-place, W., April 9th, 1916.

THE DROITWICH BRINE BATHS.

To the Editor of THE LANCET.

SIR,—In consequence of the large number of soldier patients who are receiving free treatment at the brine baths at Droitwich an impression appears to be entertained by certain medical men that the baths have, for the time being, been given over entirely to military patients.

Such is not the case, and the arrangements for dealing with ordinary cases are in nowise affected.

I am, Sir, yours faithfully,

J. H. HOLLYER,
Director of the Brine Baths.

Droitwich, April 7th, 1916.

ENTERIC AND TYPHOID: A POINT IN NOMENCLATURE.

To the Editor of THE LANCET.

SIR,—Since the differentiation of the typhoid group of disease into the three varieties caused by the Eberth-Gaffky bacillus, the B. paratyphosus A, and the B. paratyphosus B respectively, a need has arisen for one word which can be used for the whole group in common. In the large majority of cases it is quite impossible to diagnose clinically the three infections one from the other; and it is not always possible to obtain readily bacteriological aid.

There is no necessity, however, to coin another word, as we possess two already which are used interchangeably—"typhoid" and "enteric." I suggest that the word "enteric" be used to denote all or any of the three infections above mentioned, and any similar that may hereafter be differentiated; and that the word "typhoid" be restricted to cases of infection by the Eberth-Gaffky bacillus.

I am, Sir, yours faithfully,

E. W. GOODALL.

Eastern Hospital, Homerton, N.E., April 10th, 1916.

STEEL HELMETS FOR THE ARMY.

To the Editor of THE LANCET.

SIR,—Although no one can approve of the manner in which an officer of the Royal Army Medical Corps drew attention recently in the House of Commons to the need for the issue of steel helmets to the army, yet every surgeon who has seen much of the wounds received by our soldiers in the present war will agree that there is a most pressing need for the supply of steel helmets to the soldiers. No small proportion of the wounds received involve the head, and the use of a steel helmet would have prevented very many of these. Even when the bullet or shell fragment has done no more than groove the scalp, a convalescence of several weeks is required before the soldier can return to the firing line, and if we put the matter on the low level of expense, it is clear that much money is unnecessarily used in the carrying of these soldiers to and fro. The skull itself is, however, in many cases grooved, and in these cases the throwing off of the necrosed portion of bone will take many weeks. In other cases still the brain has been injured, and in a large proportion of these a fatal result has followed. It is often said that a steel helmet cannot be devised which is capable of preventing all bullet wounds of the cranium. This is no doubt true, but it is equally true that a very large proportion of the projectiles would be arrested. The Government has already issued a few hundred thousand steel helmets, but the delay in issuing the remainder is entirely unnecessary, and I cannot doubt that if the authorities appreciated the value of the steel helmet very little time would elapse before all our troops serving at the front would be provided with it.

I am, Sir, yours faithfully,

April 8th, 1916. F.R.C.S.

DIFFERENT NAMES FOR IDENTICAL SUBSTANCES.

To the Editor of THE LANCET.

SIR,—With regard to the annotation in your issue of April 8th relative to the use of the word "Tolamine" as a short title for para-toluene-sodium-sulphochloramide, we suggested the use of this word to the authors of the research in place of chloramine or chloramine-T, the names they gave to the substance, because the word chloramine has been used by John Wyeth and Brother, Philadelphia, for at least 25 years to denote a compound chloride of ammonium pastille manufactured by them.

We were desirous of respecting the wishes of the investigators by adopting the title they suggested, but felt bound to regard the vested interests of the manufacturers who had used the word chloramine for at least a quarter of a century to describe a particular preparation of their manufacture. We made our position in the matter perfectly clear to the investigators and gave them the option of adopting "Tolamine" as a common word for the substance, but as they did not agree to this suggestion we then explained that it was impracticable for us, in the circumstances we had mentioned, to use the word chloramine or chloramine-T (the latter title still containing the word chloramine), and we should therefore issue the preparation under the word "Tolamine" and register it as our trade mark.

In our opinion the use of the word chloramine involves the danger of using one name for many substances, as, quite apart from the confusion which will arise with the existing proprietary preparation, chloramin and chloroamine are applied to the simple compound NH_2Cl, and further there is additional risk of confusion with the Codex preparation chloramide. From the trade point of view the *Chemist and Druggist* has also pointed out that there is likely to be a good deal of confusion in the use of the word chloramine proposed for para-toluene-sodium-sulpho-chloramide.

We are, Sir, yours faithfully,

BURROUGHS WELLCOME AND CO.

Snow Hill Buildings, E.C., April 10th, 1916.

The War.

THE CASUALTY LIST.

THE following names of medical officers appear among the casualties announced since our last issue :—

Killed in Action.

Major W. L. Hawksley, R.A.M.C. (T.F.), qualified in 1904, and held a public health appointment at Liverpool prior to the war.

Died.

Captain F. F. German, R.A.M.C., qualified in 1881, was in charge of the Military Hospital at Seaforth Barracks, and was medical officer of health for Waterloo with Seaforth, Liverpool.

Colonel A. E. J. Barker, A.M.S. (Major 3rd London General Hospital, R.A.M.C.) was educated at Dublin and at Bonn University, and was Professor of Surgery at University College, London.

Major R. S. Smyth, R.A.M.C., received his medical education at Dublin, qualifying in 1904, and joined the R.A.M.C. in 1905. He was mentioned in despatches by Viscount French, and was a well-known football player in Ireland.

Captain G. F. Barr, R.A.M.C., qualified in 1914 at Glasgow, and joined the R.A.M.C. in January, 1915.

Wounded.

Captain C. R. Woodruff, R.A.M.C.

Lieutenant N. McCall-Smith, R.A.M.C.

DEATHS AMONG THE SONS OF MEDICAL MEN.

The following sons of medical men must be added to our lists of those who have fallen during the war :—

Colonel A. E. J. Barker, A.M.S., son of the late Dr. W. Barker, of Dublin.

Major W. L. Hawksley, R.A.M.C., son of the late Dr. H. L. Hawksley, of Southport.

Lieutenant J. Nichol, Royal Scots Fusiliers, and Flying Officer, Royal Flying Corps, second son of Dr. F. E. Nichol, of Margate.

Second Lieutenant C. B. Underhill, West Yorkshire Regiment, fourth son of Dr. F. T. Underhill, formerly of Tipton, Staffs., and now medical officer of health of Vancouver City, British Columbia.

MENTIONED IN DESPATCHES.

In a despatch to the Chief of the General Staff, Army Headquarters, India, dated Jan. 1st, 1916, dealing with the operations in Mesopotamia, General Sir John Nixon, K.C.B., mentions the following medical officers for distinguished service :—

Surg.-Gen. H. G. Hathaway, C.B.
Col J. F. D. negan, R.A.M.C.
Col. P. Behir, I. M.S.
Col. H M. Adamson, R.A.M.C.
Lt.-Col. E. Jennings, I.M.S.
Lt.-Col. H. O. B. Brown-Mason, R.A.M.C.
Maj H R. Brown, I.M.S.
Maj. A. Spitteler. I.M.S.
Maj. S. Anderson. I.M.S.
Maj. F. C. Lambert, R.A.M.C.
Capt. G. Wilson, R.A.M.C.
Capt. P. B Bharucha, I.M.S.
Capt. R. O. Clifford, I.M.S.
Capt. R. E. Flowerdew, I. M.S.
Capt. F. A. Robinson, R.A.M.C.
Capt K K. Mukerji, I.M.S.
Capt. J Stirtin, R.A.M.C.
Lt. R. V. Martin, I M.S.
Lt F. T. Simpson, R.A.M.C.
2nd Class Asst.-Surg. E. S. Shede
3rd Class Asst.-Surg. H. A. Cotton

MILITARY ORTHOPÆDICS.

Lieutenant-Colonel Robert Jones, R.A.M.C. (T.), has been appointed by the War Office Inspector of Military Orthopædics, and military hospitals will be organised and conducted under his supervision specially to deal with the injuries to limbs and joints of men wounded in the war, with the object of fitting them for civilian employment. The support and practical assistance of the British Red Cross have been secured for a scheme which those who have witnessed at the Roehampton Hospital what can be done in these directions know will have a valuable outcome.

MEDICAL NOTES FROM THE SALONICA FORCE.

A Field Ambulance Officer with the Salonica Force writes as follows:—Everyone is aware of the somewhat unique position of the Allies' army around Salonica. The medical arrangements of the Salonica Force, after the retreat, have been carried out under conditions somewhat easier than those in a country where it has been necessary to plan and erect hospitals at the time when heavy fighting has already commenced. The outstanding feature of medical interest while British troops were in the Lake Doiran district was the amount of frost-bite—true frost-bite—not the "frozen feet" of France in the winter of 1914–15. At the present time the lines of communication are not long, but the similar medical units exist as in France—field ambulances, casualty clearing stations, stationary and general hospitals. The railroads and roads are few, and so transport of sick and wounded forms one of the difficulties of the medical service. The methods adopted to overcome these difficulties and the sanitation of the camps are the interesting topics to the medical man.

The present tactics have made it possible to have all the hospitals and casualty clearing stations on good roads, and motor transport is available between these and the quay. In France motor ambulances were able to work with the field ambulances; in Greece that is not at present possible owing to the few roads in existence. The method of transport available will be mentioned later. The general hospitals are under canvas and have been able to find good sites owing to the extent of open plain which exists on two sides of the town for some distance.

The hospitals are occupied with treating the average influx of sick from the army. There is no outstanding disease, although a type of fever not simulating any text-book fever has been prevalent. It is of a relapsing type—hence comparable to "trench fever." It occurs in men of every age and commences suddenly with pyrexia of about 100° F., the pulse-rate rising correspondingly. The pyrexia lasts 48 hours as a rule, and then an apyrexia period follows, lasting three, four, or five days; some observers state as long as seven days. Then a pyrexial period recurs lasting 48 hours. Cases are established with three and four relapses. Symptoms are not plentiful and often limited to back pains and pains in the legs, particularly down the shins. No physical signs of anything abnormal in the circulatory, respiratory, and alimentary systems exist; a few observers record some cases with diarrhœa, but this is the exception. The noticeable feature is the persistence of pains during the apyrexial period. There are no cases recorded of important complications, but patients require a considerable time to convalesce after several relapses of fever. Pathologists have shed no light on the origin of the disease at present. The population of the town suffer from malaria, and this occurs in all the villages of the district. It appears that the worst months are August and September. Cholera occurs in epidemics, the last two being in 1911 and 1913. All the medical officers are able to acquaint themselves with a knowledge of local diseases and conditions, owing to the early formation of the Salonica Medical Society, of which Surgeon-General W. G. Macpherson, C.B., is the president. This society meets weekly at each hospital in turn, and discussions and demonstrations lasting about two hours are eagerly attended. The proceedings will be published from time to time in the *Journal of the Royal Army Medical Corps*.

The success of the sanitary arrangements will be tested when hotter weather commences and flies begin to breed, but the details of these as carried out by the Salonica force are of interest, as are also the means of transport from the regiments and ambulances to the clearing stations, and with the aid of the few sketches here reproduced these will be described.

Sanitation.

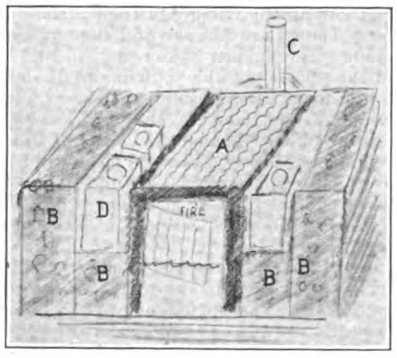
The country around Salonica occupied by the army consists of a range of hills, in most places about 1000 feet above sea-level, with plain on each side of the range. These hills are broken up by many gorges, in each of which runs a stream after any fall of rain, and in the larger valleys always one finds a stream rushing down. The larger streams at this time of year increase to double their size after 12 hours of steady rain. The country therefore possesses one outstanding advantage for camping sites—plenty of streams, and hence

a persistent water-supply at this time of year. On the other hand, the tendency for the water to stand on much of the level ground makes every camp wet unless properly drained.

It has been somewhat easier to carry out sanitary arrangements in the Salonica army than in some fighting zones, for there has been no fighting in the present position. Regimental sanitation has not been difficult, for in most cases the regiments have been divided up, and a camp of under 500 men with few horses and mules is not difficult to keep clean. In regard to the water, this is brought from the stream on mules, each mule carrying a metal urn covered with cloth on each side of the pack saddle, or a "pakkal," which consists of a rubber bag inside a canvas valise. From these the water is poured into zinc tubs, each provided with a lid. In these tubs is placed chloride of lime to purify the water. The water, however, is extraordinarily pure. Most of the streams that have been tested have proved to be of excellent water. In fact, one gathers that the only water-supply that has been polluted at any time was one near the base; in this case a pipe came from the stream to large storage tanks near a road, and from the tanks the water was drawn for surrounding units. The water is clear, and so clarification is not required except after a heavy storm, such as causes the streams to bring down mud with the water. In some places the purification of the water does not rest with the unit, as is usually the custom, but the divisional sanitary officer employs some of his orderlies to carry out the necessary purification of the water at the edge of the stream or beside the spring from which the water is drawn. This system has obvious advantages, and is carried out by having a series of zinc tubs beside the supply. These are kept full and the requisite quantity of chloride of lime added from time to time. By this method disease due to water contamination is unlikely to occur, but of course would affect a large number of men. A source of water which has not been mentioned is the ancient aqueduct. This sounds perhaps fabulous, yet several fine aqueducts still exist and show signs of modern workmanship. Each has a cross-section of about one square foot and is walled and roofed by good cement. The water is excellent, both clear and free from all salts and organisms. It flows uphill in places and forms part of the water-supply to the town. There is no chance of pollution of these aqueducts except at the small openings from which water is drawn. What quantity of water will be available from these natural sources in the hotter weather cannot be foretold.

The disposal of all forms of refuse and excreta is a subject on which much has been written, and so many methods are adopted, each of which fulfils the same purpose. From experience in France most units adopt the method of burning

FIG. 1.

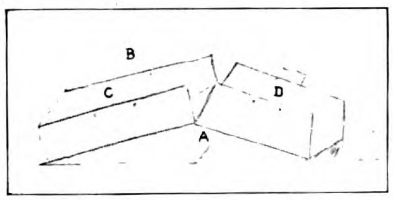


Incinerator showing method of heating water. A, Roof; B, mud walls C, chimney; D, biscuit-tin containing water. Size, 6 ft. square; incinerator, 6 ft. by 3 ft. by 2 ft.

all solid refuse, and treating all liquids so that they will be absorbed by the earth from pits. Dealing first with solids, one finds that horse and mule dung predominates over all other refuse in the majority of units, as it is necessary to have mules for transport. This is dealt with by incineration, thus preventing any accumulation of manure. The incinerator used in most units is about 4 feet square and 4 feet high, and if one is insufficient several are built out of mud and stones. A new type is in use in some places consisting of a central support such as a biscuit tin and radiating iron strips fixed on pieces of wood protruding 18 inches from the ground. The iron strips are the bands fixing the fodder together, and about a dozen are required for the incinerator. The manure is thrown on to this and burns well, as it is raised off the ground and has a free draught from below. An ingenious incinerator has been devised, which serves a double purpose, the second one being to heat water for washing purposes. This is done by building with mud and stones round the incinerator an additional wall. It is only possible in a square or rectangular incinerator. Between the two walls the floor is raised with more mud, and on this are placed biscuit tins with water in them. It is found that when an incinerator is burning well the water is quickly heated, and six or eight tins of two gallons' capacity can be heated at the same time. (Fig. 1.)

Human excreta are dealt with in a similar manner to manure—i.e., incineration. Surgeon-General Macpherson takes a great interest in latrine systems, and while Director of Medical Services to the First Army in France he introduced a system of latrine, which became popular where it was in use. This type of latrine has become much more general in the units of the Salonica army, and is seen at its best at the New Zealand Stationary Hospital. Full details of the latrine were published last January in the *Journal of the Royal Army Medical Corps*. There are two tins (see Fig. 2), each consisting of half of a Pratt's petrol tin. Each

FIG. 2.



Macpherson latrine system. Two half-tins in position. A, End of tin (everted to raise end); B, handle of wire; C, for urine; D, for fæces.

tin is placed on the ground with one end raised 4 inches, the two raised portions being together. A man squatting over these tins defæcates into one and urinates into the other. That is not all. A piece of newspaper, about 12 inches by 18 inches, is placed in the hindmost tin, and the stool is passed on to this; when the man has completed his defæcation it is then his duty to remove his own excreta from these tins. The front tin is emptied into a drain leading into a pit, so that the urine is absorbed by the earth. The newspaper is taken with the stool inside it and placed on a special incinerator. The tins are replaced in position, and a piece of paper laid on to the hindmost tin so as to be ready for the next man. The incinerator is kept in most hospitals for dealing with fæces alone. It is found that fæces burn well with an odour to which all grow accustomed, and it has been likened to that of a bad Turkish cigarette. Some prefer to dry the fæces at the side of the tin in which they are burning. Any quantity can be dealt with by this method. The advantage of burning fæces is obvious, and the simple method of separating fæces and urine facilitates their destruction by burning. Strict discipline is necessary for this latrine system to be worked, so that tins are never soiled. After a lecture and posting of rules how to use these latrines it has been found that they work excellently, especially if an orderly or convalescent patient is employed at the latrine to supervise the adherence to the rules. The advantages of the system are manifest when one realises that flies have no place to lay eggs in any fæcal matter, for only a minute elapses between the passing of the stool and its disposal in the incinerator. Some units separate fæces and urine by two tins under a seat, as a rule consisting of a V-shaped piece of wood placed on three uprights, the point of the V being in front. Prevention of breeding of flies is the object of all, and the chief point aimed at is the incineration of all solid matter.

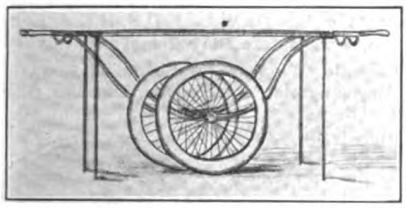
A matter of sanitary interest in this area is that during December and January whenever a unit went to a new camp site it was almost invariably necessary for them to remove carcasses from the ground. The Greek has a habit of driving a bullock, mule, pony, or donkey until the beast actually falls down dead. He then leaves the beast beside the road. Later he appears and removes the hide, leaving the carcass

on the spot. From the number of these carcasses one would imagine the mortality of the beasts of burden is high. The vultures attack the carcasses, and a most insanitary state of affairs exists until dealt with by our sanitary officers.

Transport.

As the tactics differ in trench warfare and fighting in mountainous country, so likewise the medical arrangements *in toto* suitable in France would be unsuitable for any army fighting around Salonica or in Bulgaria or in Serbia. Thus

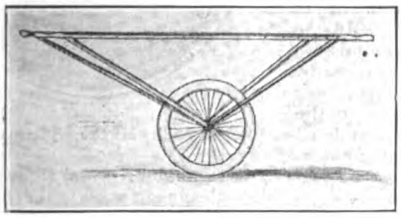
FIG. 3.



Miller-James collapsible stretcher carrier.

changes in the equipment and transport of field medical units of the Salonica force have been made to make units previously in the Dardanelles or France efficient to deal with sick and wounded in a country with geographical conditions differing from those which such units have formerly experienced. In France trench stretchers and motor ambulances were necessary accessories to the original equipment, but in the Near

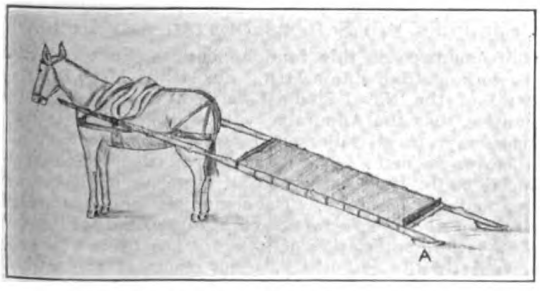
FIG. 4



Mono-wheel stretcher carrier.

East improvisation of stretchers and modes of transport are necessary, as roads are few and hill tracks are all that can be depended on as a route for casualties from field units. Hence one finds the motor ambulance confined to a small area close to the sea. Horse ambulances (Mark VI. and Mark I.) can go further; the former is heavy, weighing $1\frac{1}{4}$ tons, and in winter sinks deeply into the mud; the latter is light and well sprung, and weighs $\frac{3}{4}$ ton, and is suitable for good hill tracks.

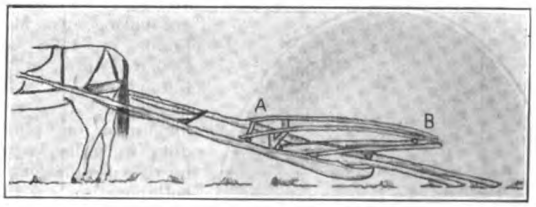
FIG. 5.



Simple travois (after Greenleaf). A, Shoe.

Wheel stretchers are being modified that mules can pull them up tracks. In some cases shafts are fixed to these, and in others the traces are fixed to swingle-trees attached to the carriage. Three forms of wheel stretcher exist—the army type, the carriage, ambulance-stretcher, Mark I., which has large wheels; the Miller-James folding carriage, consisting of two motor-bicycle wheels and metal framework (Fig. 3), and a mono-wheel introduced during the last year, which consists of one motor-bicycle wheel and light folding framework. (Fig. 4). Travois are being made by units, and many different kinds were displayed at an exhibition in January. Some were cumbersome and others would not stand the trial given to them over a piece of rough ground. The essential requirements are that a wounded man may be able to lie on a stretcher (or improvised substitute) and be pulled by a mule with as little shaking as possible, the whole vehicle being able to get over ditches and rough ground. To suit these conditions it is found that the travois made out of green wood takes the first place. The simple travois, after the style of Greenleaf's travois (Fig. 5), is not a great success, but the shock of going over rough ground is diminished 50 per cent. by making one leg of the travois 1 foot to 8 inches shorter than its fellow. Another method of obviating this difficulty is to have a third and larger leg in

FIG. 6.

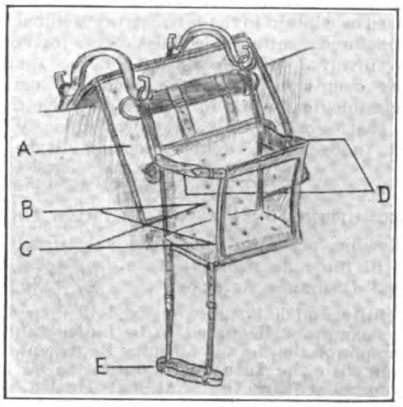


Harris travois. Patient lies between A and B on sack filled with leaves.

the centre, which only comes into use on uneven ground and diminishes the shaking of the patient greatly. (Fig. 6.) Manufacture of these conveyances is facilitated by the quantity of wood in many of the places which ambulances have chosen for their dressing stations.

Mule transport for patients is useful for such as need not travel lying down. A strong mule is required to carry two patients sitting in cacolets, one patient on each side of the pack-saddle. (Fig. 7.) This is not an uncomfortable chair,

FIG. 7.



A, Pack-saddle; B, leather cushion; C, collapsible iron frame D, strap; E, foot support.

and the stronger mules work readily if the weight is equally balanced. Litters have been made to fix to the pack-saddles, one litter each side of a mule or two between two mules. Stretchers are not adaptable for fixing on to mules for transport of lying-down cases. It is more than probable that the lying-down case will experience great hardship as he is evacuated.

To sum up the available transport:—I. In any locality: (1) hand-carriage—(*a*) on army stretcher (Mark II.), (*b*) on trench stretcher in which patient's back is supported against the back of the front bearer; (2) wheel-stretcher—(*a*) mono-wheel, (*b*) two-wheeled, either may be pulled by a mule; (3) travois; and (4) litters. II. Where tracks exist: Horse or mule ambulances—(*a*) heavy, and (*b*) light. III. Where roads exist: Motor ambulances.

OBITUARY OF THE WAR.

JOHN TEMPLE LEON, M.D., B.Sc. LOND., M.R.C.S., L.R.C.P. LOND., D.P.H. CAMB.,

CAPTAIN, ROYAL ARMY MEDICAL CORPS (T.).

Captain John Temple Leon, who died at Southsea on March 30th from cerebro-spinal meningitis, contracted from a military patient under his care, was 50 years of age. He started with the intention of being a scientific chemist, and after leaving Clifton went to Germany. Subsequently he entered at University College, London, where he was Tufnell scholar in 1885. Two years later he graduated as B.Sc. Lond., and in 1890 was appointed assistant lecturer on physics and demonstrator of chemistry in St. Mary's Hospital Medical School. After holding those appointments for three years he commenced his medical studies at St. Mary's, where he had a successful career, graduating as M.B. Lond. in 1896 and D.P.H. Camb. in the following year. After qualifying he was appointed on plague duty in India, where he did useful work in collaboration with Professor Haffkine. Subsequently he served throughout the South African War and was for the greater part of the time attached to No. 8 General Hospital at Bloemfontein. On his return from South Africa he was for a time assistant medical superintendent of Paddington Infirmary, after which he settled in practice at Southsea and was shortly afterwards appointed honorary assistant physician to the Royal Portsmouth and Gosport Hospital. On the outbreak of the present war he was mobilised as captain in the Royal Army Medical Corps (T.) and was appointed sanitary specialist officer for Portsmouth. His duties involved the inspection of the sanitation of the various camps in Hampshire, and the carrying out of the bacteriological work in connexion with the various epidemics that arose. He worked assiduously at these posts, and there is no doubt that his death was due to his unsparing devotion to duty. He had for several weeks been thoroughly overworked, and proved susceptible to infection from a severe case of cerebro-spinal meningitis. He first showed the symptoms of the disease on March 20th. It rapidly acquired a virulent form, and in spite of the devoted attention that he received from his colleagues, Lieutenant-Colonel C. F. Routh and Major C. A. S. Ridout, he died ten days later. He leaves behind him the record of a brave man who worked unsparingly for his country, whilst the medical profession in Hampshire is the poorer for an excellent physician and an able bacteriologist.



RONALD WINGRAVE DUNCAN, L.R.C.P., L.R.C.S. EDIN., L.F.P.S. GLASG., L.D.S. R.C.S. EDIN.,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain Ronald Wingrave Duncan, who was killed in action in Mesopotamia, at the age of 33, received his medical and dental education in Edinburgh. After qualifying in 1906 he held appointments at the West Bromwich District Hospital; Salford Royal Hospital; Norfolk and Norwich Hospital; David Lewis Epileptic Colony, Alderley Edge; Monsall Fever Hospital, Manchester; and Ladywell Sanatorium, Salford. He left the last appointment in November, 1914, to take a commission in the Royal Army Medical Corps. He was attached to the 2nd Black Watch, Bareilly Brigade, Meerut Division, Indian Expeditionary Force.



Dr. James Fletcher writes of him: "Mr. Duncan was a most pleasant and capable colleague to work with, and though naturally of a very retiring disposition he was a thorough sportsman, with a keen sense of humour, which found its full vent when in congenial company. His extremely kindly disposition and sympathy for others endeared him to his patients and the staff, and I shall always have the happiest recollections of my association with him."

THE RECRUITING OF PHARMACEUTICAL CHEMISTS.

The following provision has been substituted for that previously in force as regards chemists dispensing under the National Insurance Acts:—

Men lawfully and habitually engaged in dispening medicines to be exempted if agreed to be indispensable for the needs of the population by the Military Representative, after consultation with the Insurance Committee for the area,* or if recommended by the National Health Insurance Commission and approved by the Army Council.

* The Insurance Committee shall consult the Pharmaceutical Committee before deciding which cases to recommend for exemption.

This provision places the Insurance Committee for the area in a position of responsibility as regards the dispensing service of the whole of the civil population, and not solely as regards the dispensing service of insured persons; but the National Health Insurance Commission points out that the proper consideration of the insured must necessarily involve attention to the needs of the civil population as a whole, since it is doubtful whether in any circumstances the requirements of insured persons could be adequately served unless the available chemists were in a position to cope simultaneously with the needs of the uninsured. The Insurance Committees are therefore enjoined to consult with the Pharmaceutical Committee as to the list of persons to be recommended to the Military Representative for exemption, and in the event of any disagreement between the Insurance Committee and the Military Representative as to the exemption of any of the persons whom the Committee, after consultation with the Pharmaceutical Committee, consider to be indispensable, the question can be referred to the Commissioners.

SOLDIERS AND SAILORS DENTAL AID FUND.

The committee of this fund announces the termination of its work, as from March 11th. Sir Arthur May, Director-General of the Naval Medical Service, has informed the committee that the Admiralty will supply artificial teeth, if necessary, to all sailors and recruits for the navy and all the overseas men. The War Office has decided to supply artificial teeth, if necessary, to all overseas men, but not to the home-service army. The committee can congratulate itself upon the success of its efforts on behalf of the two services; the appreciation of its work has been constantly expressed by the authorities. The report of the work of the committee shows that since its inception the fund has dealt with over 11,000 fighting men, and this without paying salaries, rent, rates, or taxes. Owing to the patriotism of the press and the generosity of the supporters of the fund no expenses have been incurred in advertising. Since November, 1915, the committee has paid for all the artificial teeth of the home-service men.

AMONG the new justices of the peace for the County of London is Mr. Morgan I. Finucane, surgeon and barrister, of Ashley-place, S.W.

Medical News.

UNIVERSITY OF OXFORD.—The following degree has been conferred:—

Doctor of Medicine—Alfred Leslie Pearce Gould, Chr. Church.

EXAMINING BOARD IN ENGLAND BY THE ROYAL COLLEGES OF PHYSICIANS OF LONDON AND SURGEONS OF ENGLAND.—At the Second Professional Examination in Anatomy and Physiolology held on March 30th and 31st, and April 3rd and 4th, 78 candidates presented themselves, of whom 56 were approved and 22 were rejected. The following are the names and medical schools of the successful candidates:—

Yenny Abdel-Messiah, King's College; Abraham Abelson and Norman Dyer Ball, University College; Margarita Sargood Barfield, London School of Medicine for Women; Jules Samuel Boruchowitz, Brussels University and University College; Jean Auguste Andre Bouic, Guy's Hospital; Osmond Hayman Brown, Charing Cross Hospital and King's College; Norman Carwardine Cooper, Bristol University; Andrew Norman Macdonald Davidson and Evan Sherrah Davies, King's College; Frank Swinburne Drewe, St. Thomas's Hospital; Abraham Eldinow, London Hospital; Frederick Knowles Escritt, Guy's Hospital; Frederick Augustus Evans, London Hospital; Paul Faraci, Beirut and King's College; John Eskdale Fishburn, Guy's Hospital; James O'Farrell Fletcher, St. Mary's Hospital; Richard Gainsborough, Oxford University; Edwin Stowell Gawne, Liverpool University; Nannie Gibson, London School of Medicine for Women; Chapple Gill-Carey, Guy's Hospital; Philip Eldon Gorst, Liverpool University; Lawrence Handy, St. Bartholomew's Hospital; Herbert William Hill and Tom Robert Ernest Hillier, Middlesex Hospital; Anthony Bancroft Isaacs, St. Thomas's Hospital; George Henry Johnson, Middlesex Hospital; Ernest Francis Kerby, Guy's Hospital; Haji Hyderali Khan, Bombay University and Guy's Hospital; Francis Wharton Lemarchand, St. Bartholomew's Hospital; Pierce Lloyd-Williams, Douglas McClean, and John Joseph Myles MacDonnell, St. Thomas's Hospital; Charles Moffatt, Guy's Hospital; John Stephen Moore, St. Thomas's Hospital; Arthur Richard Neckles, Guy's Hospital; Clement Nicory, St. Thomas's Hospital; Arthur Gordon Ord, Guy's Hospital; Leonard Duncan Porteous, St. Bartholomew's Hospital; Percival George Quinton and Walter Ernest Quitman, University College; David Hesketh Richards and Enoch Sanders, Liverpool University; Malcolm Catchick Sarkies, Henry Mearns Savery and Walter Manley Savery, Middlesex Hospital; Ernest Algernon Sparks, St. Thomas's Hospital; Victor Alexander Trevor Spong, St. Bartholomew's Hospital; Graham McKim Thomas, Guy's Hospital; John Henry Tighe, Birmingham University; Bertie Moorwood Tonkin, Guy's Hospital; William Stephen Tunbridge, Oxford University and St. Bartholomew's Hospital; Jacob Eliza de Villiers Van der Merwe, Guy's Hospital; Frederic Francis Wheeler, St. Mary's Hospital; Herbert Edward Williams, London Hospital; and Robert Wolff, Middlesex Hospital.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—At the Preliminary Science Examination for the Licence in Dental Surgery, held on March 28th, 29th, 30th, and 31st, the following candidates were successful:—

Chemistry and Physics.—Alfred Meredyth Bennett, Westminster School; John Heath Broadhead, Technical College, Darlington, and Bootham School, York; Christopher Egbert George Busbridge, Plymouth Technical School; Harold Edward Fussell, County School, Wrexham; Graham Murray-Shirreff, Bristol University; Harry Sydney Kemp Seal, University College; Victor Leslie Simpson, Polytechnic Institute; William Sandford Wald, Eastern District Secondary School, Douglas; John William Ernest Warren, Birkbeck College; James Andrew Whittle, Royal Dental Hospital; Norman Bulst Wells, Municipal College, Bournemouth; and Frank Woodford, Guy's Hospital.

Chemistry.—John William Kewley Cain, Eastern District Secondary School, Douglas; and Allistair Hyland Grieve, Birkbeck College.

Physics.—William Thomas Lloyd Douglas, London Hospital; and Thomas Edward Hoggins, Birmingham University.

SOCIETY OF APOTHECARIES OF LONDON.—At examinations held recently the following candidates were successful:—

PRIMARY EXAMINATION, PART II.

Anatomy.—W. M. Anthony, St. Thomas's Hospital; G. R. Aspinwall, Cambridge and Guy's Hospital; W. A. Bibby, Manchester; T. L. Bonar, Cambridge and Middlesex Hospital; J. Brodetsky, London Hospital; K. R. Chapple, St. Bartholomew's Hospital; E. S. Davies and D. A. Dyer, King's College; J. Gordon, Leeds; J. Gorsky, King's College; W. R. G. Harris, London Hospital; R. A. Hickley, St. Mary's Hospital; A. R. Hill and O. S. Hillman, Middlesex Hospital; C. Holmes, Liverpool; R. E. Jenkins, London Hospital; E. F. J. Jones, Cardiff; R. M. Jones, Liverpool; F. W. Kemp, Charing Cross Hospital and King's College; N. H. Kettlewell, Bangor and Middlesex Hospital; W. Kilroe, Guy's Hospital; P. Lloyd Williams, St. Thomas's Hospital; L. Lyne, Guy's Hospital; J. J. M. MacDonnell and J. S. Moore, St. Thomas's Hospital; G. S. Morgan, Oxford and London Hospital; H. S. Morris, Guy's Hospital; W. R. Ranson, Middlesex Hospital; G. V. Richards, Guy's Hospital; S. Robinson, Belfast; A. H. Shelswell and H. W. Southgate, Guy's Hospital; E. A. Sparks, St. Thomas's Hospital; J. Stephen, Manchester; A. C. Teuten, St. Mary's Hospital; C. de B. Thomson, Middlesex Hospital; and A. E. Young, Bristol.

Physiology.—W. M. Anthony, St. Thomas's Hospital; G. R. Aspinwall, Cambridge and Guy's Hospital; J. Brodetsky, London Hospital; E. S. Davies and J. Gorsky, King's Hospital; W. R. G. Harris, London Hospital; A. R. Hill and O. S. Hillman, Middlesex Hospital; C. Holmes, Liverpool; R. E. Jenkins, London Hospital; E. F. J. Jones Cardiff; F. W. Kemp, Charing Cross Hospital and King's College; J. S. Lewis, St. Mary's Hospital; P. Lloyd-Williams, St. Thomas's Hospital; L. Lyne, Guy's Hospital; J. J. M. MacDonnell and J. S. Moore, St. Thomas's Hospital; G. E. Morgan, Oxford and London Hospital; H. S. Morris, Guy's Hospital; W. R. Ranson, Middlesex Hospital; G. V. Richards, A. H. Shelswell, and H. W. Southgate, Guy's Hospital; E. A. Sparks, St. Thomas's Hospital; A. C. Teuten, St. Mary's Hospital; and A. E. Young, Bristol.

PRIMARY EXAMINATION, PART I.

Biology.—K. J. H. Davies, Guy's Hospital; and H. T. M. Price, Birmingham.

Chemistry.—K. J. H. Davies, Guy's Hospital.

Materia Medica and Pharmacy.—L. E. A. B Farr, Cambridge and King's College Hospital; and T. F. Reason, St. Mary's Hospital.

LONDON SCHOOL OF TROPICAL MEDICINE.—At the examination of this school at the termination of the fiftieth session (January-April, 1916) the following candidates were successful:—

W. N. Leak (distinction, highest marks, Duncan medal), H. Bayon (distinction), Miss V. G. Field, E. A. Blok, and J. A. Beels.

UNIVERSITY OF MANCHESTER.—The following has obtained the Diploma in Public Health: Harold Heathcote, M.B., Ch.B. Manch.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH, ROYAL COLLEGE OF SURGEONS OF EDINBURGH, AND ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.—At examinations held recently the following candidates were successful:—

FIRST EXAMINATION.

Thomas Arnoldus du Toit, Robert Berry Forgan, William Harvie Kerr, Richard Francis Kerr, Lizzie Robertson Clark, Mayberry Hugh Carleton, Jung Bahadur Singh, and George Coote Field.

Biology.—Peter Edwin Malloch.

Chemistry.—John Murray and Andrew Wood Smith.

SECOND EXAMINATION.

Albert Ernest Hempleman, Reginald Edward Hopton, Arthur Stanley Hughes, Eduard Louis Arendorff, Rebecca Goodman, John Kohler Steel, and William Gibb.

Anatomy.—Hugh William Howatson.

Physiology.—Jacob Johannes van Niekirk, Gordon Spivey Woodhead, and James Foster Cook.

THIRD EXAMINATION.

Cecil Vale Samwell, Ernest Ebenezer Bronstorph, George Patrick de Silva, Henry Shaw, Andrew Inglis Meek, and Christopher Robert Cecil Moon.

Pathology.—Mahmoud Abdel Kader Mofreh, Eliza Jean Stuart, Patabendimuhandirange Martin Fernando, and Donald Stewart.

Materia Medica.—Daniel Cornelius Howard.

FINAL EXAMINATION.

Zachariah Albert Green, James Edward Ainsley, John Cardew Bedwell, Harold Cranwell Aloysius Haynes, Bertram Conrad Haller, James Byrne, James Virgil Reynolds Rohan, Salamon Julius Abrahams, James Blackburn, Charles Harris, Andrew Gaston, and Robert Christian Wilson Spence.

Medicine.—Stanley Wall Hoyland.

Surgery.—John Joseph Curtin.

Midwifery.—John Adami and John Joseph Curtin.

Medical Jurisprudence.—John Herbert Blackburn, Reginald Vincent Clarke, Charles George Book, William McElroy, and Maurice Andrew White.

UNIVERSITY OF GLASGOW.—At the Fourth (Final) Professional Examination for the Degree of M.B., Ch.B., the following candidates were successful:—

*William Dick Allan, John Alston, William Baird, Christina Blair Buchanan, Duncan Cameron, *Joseph Chalmers, Douglas Hamilton Coats, William Kerr Connell, Alexander Finlay Cook, Archibald Shankland Cook, Walter Gow Cook, John Norman Cruickshank, Andrew Davidson, Jane Beattie Davidson, *John Dunbar, James Brown Fisher, Matthew Mair Frew, Thomas Ronald Fulton, William Hamilton Gibson, Jessie Crawford Gilchrist, John Glaister, James Scott Kinross, †George Kirkhope, William Joseph Brown Lavery, Robert Linfay, M.A., Dorothy M'Cubbin, James Wallace Maclarlane, John MacInnes, Keith Stuart Macky, Duncan M'Laren, Elizabeth Stewart Martin, Frederick Robertson Martin, James M'Donald Matheson, William Watson Morrison, Alexander Morton, William O'Brien, James Alexander Paterson, Thomas Smith Paterson, James Herbert Paul, M.A., B.Sc., William James Poole, Thomas Joseph Desmond Quigley, James Richardson, Alexander Wilkie Ritchie, George William Ronaldson, *Mary Helen Routledge, Mary Isabel Sinclair, ‡Jane Stalker, William Mitchell Stewart, John Lawrence Torley, Robert Smellie Weir, *Clive Alan Whittingham, and *Marion Baillie Darling Wilson.

* Distinguished in Midwifery.

† Distinction in Surgery and Clinical Surgery.

‡ Distinction in Medicine and Clinical Medicine.

TYPHOID FEVER ALONG THE SHANNON.—During the past winter, as in several successive years, large stretches of country on either side of the Shannon have been flooded, and for several weeks the homesteads on the banks have been submerged in several feet of water and have been evacuated. On the return of the inhabitants to their homes this year an outbreak of typhoid occurred in the recently flooded areas near Athlone.

ROYAL COMMISSION ON UNIVERSITY EDUCATION IN WALES.—His Majesty the King has been pleased to approve the appointment of a Royal Commission on University Education in Wales. The terms of reference of the Commission are as follows: "To inquire into the organisation and work of the University of Wales and its three constituent colleges, and into the relations of the University to those colleges and to other institutions in Wales providing education of a post-secondary nature, and to consider in what respects the present organisation of university education in Wales can be improved, and what changes, if any, are desirable in the constitution, functions, and powers of the University and its three colleges." The following are the names of the persons appointed to serve on the Commission: The Right Hon. Viscount Haldane of Cloan, O.M., K.T., F.R.S., LL.D., chairman; Professor W. H. Bragg, F.R.S., M.A., D.Sc., Quain professor of physics in the University of London; the Hon. W. N. Bruce, C.B., a principal assistant secretary under the Board of Education; Sir Owen M. Edwards, M.A., Chief Inspector of the Welsh Department of the Board of Education; W. H. Hadow, M.A., D.Mus., Principal of Armstrong College, Newcastle; A. D. Hall, M.A., F.R.S., a Commissoner under the Development Act; Sir Henry Jones, M.A., LL.D., D.Litt., professor of moral philosophy in the University of Glasgow; Sir William Osler, Bart., F.R.S., M.D., D.Sc., LL.D., D.C.L., Regius professor of medicine in the University of Oxford; and Miss Emily Penrose, M.A., Principal of Somerville College, Oxford. The secretary to the commission is Mr. A. H. Kidd, of the Board of Education, to whom all communications should be addressed.

PETROL CONSUMPTION BY IRISH MEDICAL MEN.—An inquiry has been issued from the office of the Lord Lieutenant of Ireland to all medical men, who are asked to state on a form their consumption of motor spirit and the type of car or motor cycle used by them. After these returns have been collected it will be decided what amount of spirit each medical practitioner will be entitled to receive during war time.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

The Local Government (Emergency Provisions) Bill.

Two clauses in this Bill have special relation to medical men. One of these clauses, provisions as to the notification of diseases, reduces the fee payable to a practitioner for the notification of a case of infectious disease from half-a-crown to one shilling. When the Bill was in Committee in the House of Commons on Tuesday, Sir PHILIP MAGNUS moved an amendment to the effect that the fee should remain unchanged except in the case of measles. Mr. HAYES FISHER, the Parliamentary Secretary to the Local Government Board, resisted the amendment. The proposal to reduce the fee came from the Retrenchment Committee, and he was afraid that he could hold out no hope that the Local Government Board would forego the clause, at any rate for the period of the war. The amendment was negatived without a division and the clause was agreed to.

The text of the clause is in the following terms: "Notwithstanding anything in the Infectious Diseases (Notification) Act, 1889, or in any other Act, or in any Order of the Local Government Board, the following provisions shall have effect: (*a*) The fee to be paid to a medical practitioner for a certificate or notification sent by him to a medical officer of health in respect of a case of disease to which the Act or Order applies, occurring in his private practice, shall be one shilling and no more; (*b*) Every case of infectious disease occurring in any building, tent, van, shed, or similar structure in the occupation of any of His Majesty's forces, or of any person employed by or under the Admiralty, the Army Council, or the Minister of Munitions shall be notified to the medical officer of health of the district by the medical attendant if it would have been his duty to notify it if it had occurred elsewhere; and the local authority shall pay to the medical attendant (unless he is a medical officer or practitioner who holds a commission in any of His Majesty's forces or is employed by the Admiralty or Army Council and is prohibited from engaging in private practice) for the certificate or notification a fee of one shilling, whether the case occurs in his private practice or otherwise."

Another clause in the Bill has reference to the payments by county councils in respect of the salaries of medical officers. It runs:—"If a temporary substitute is appointed with the sanction of the Local Government Board to replace any medical officer of health or inspector of nuisances who has been granted leave of absence in accordance with the provisions of this Act to serve in or with His Majesty's forces, the county council shall be liable under paragraph (c) of subsection (2) of section twenty-four of the Local Government Act, 1888, to pay to the local authority one half of the sum actually paid by the local authority to the medical officer or inspector of nuisances so replaced or his wife or other dependants nominated by him under this Act, and of the salary of the temporary substitute as sanctioned by the Local Government Board, taken together."

The Bill has passed through Committee and been reported with amendments to the House.

HOUSE OF COMMONS.

WEDNESDAY, APRIL 5TH.

Royal Commission on Venereal Diseases.

Mr. KING asked the Chief Secretary to the Lord Lieutenant of Ireland whether his attention had been drawn to the recommendations in the report of the Royal Commission on Venereal Diseases with respect to the examination of prisoners; whether it was his intention to carry them into effect in Ireland, and whether he would give an undertaking that no female prisoner or female person detained in a Borstal institution would be locally examined except by a woman doctor.—Mr. BIRRELL wrote in reply: So far as the General Prisons Board for Ireland is concerned no difficulty will be made in giving effect to the recommendation of the Royal Commission on Venereal Diseases that where the medical officer of a prison considers that an examination of a woman is necessary, it should only be made by a woman doctor. In the only prison that is wholly occupied by women prisoners in Ireland the medical officer is a woman.

THURSDAY, APRIL 6TH.

Artificial Limbs for Soldiers and Sailors.

Mr. FORSTER (Financial Secretary to the War Office) informed Mr. W. THORNE that artificial limbs were supplied in kind at Government expense to disabled soldiers and sailors, and the recipients were fully maintained in hospital at public expense while they were being fitted.

The Health of Munition Workers.

Replying to Major ASTOR, Dr. ADDISON, Parliamentary Secretary to the Ministry of Munitions, said: The girls and women at Messrs. Vickers's works at Erith, who have been recently changed from the three-shift to the two-shift system, were not medically examined prior to making this change. There is, however, a qualified medical man in residence close to the works who has been specially appointed to look after the health of all the firm's workers, and he has a surgery, first-aid station, and the assistance of a qualified nurse.

Major ASTOR asked the honourable gentleman how many controlled establishments where women were employed had changed from three 8-hour shifts to two 12-hour shifts since the recommendations of the Health of Munition Workers Committee recommending 8-hour shifts were published.—Dr. ADDISON answered: So far as I am aware only one establishment—namely, Messrs. Vickers, Limited, of Erith, have changed their system of shifts for their women employees from a three to a two-shift system since the issue of the Health of Munition Workers Committee's memorandum on the subject of hours of work. My honourable friend should understand that under the system introduced there work is confined to six days a week, and that the total working hours per week are from 58 to 60. One of the chief reasons which induced the Minister of Munitions to agree to this experiment, after a careful report by a leading Home Office inspector, was that the weekly rest time was increased from 16 continuous hours to 26 in each of the first two weeks, and from 24 to 48 in the third week.

Mr. ASHLEY: Surely 60 working hours a week are too much for girls to work even on munitions?—Dr. ADDISON: I agree, but that is within the limits of the Home Office regulations and the Munition Workers Committee's recommendations.

Mr. LEWIS HASLAM asked whether the recommendations of the Health of Munition Workers Committee with regard to ventilation and mechanical devices for ensuring workers against the inhalation of poisonous fumes, &c., were being carried out with the coöperation and under the guidance of the factory inspectors' department at the Home Office.—Dr. ADDISON said in reply: The precautions in question recommended by the Committee are, I understand, already being enforced by the inspectors of the factory department of the Home Office as a part of their general administration.

Dr. ADDISON, replying to a further question by Mr. HASLAM, stated that the exercise of compulsory powers to prevent the continuance of evils indicated in the reports of the Committee had not been hitherto found necessary, but if occasion arose the Minister of Munitions was prepared to take this course.

The Navy Medical Service.

Mr. ANEURIN WILLIAMS asked the Secretary to the Admiralty how many qualified medical men were now employed in connexion with the navy.—Mr. MACNAMARA wrote in reply: The number employed is 1118. This does

not include part-time medical men—namely, Admiralty surgeons and agents.

Vaccination in the Army.

Mr. TENNANT (Under Secretary for War) informed Mr. CHANCELLOR that no instructions for curtailment of leave to men in connexion with refusal of vaccination had been issued by the War Office.

Sickness at Oswestry Camp.

Sir F. CAWLEY asked the Under Secretary for War how many cases of sickness there had been at the Oswestry camp during the last six months; how many deaths had taken place either at the camp or from sickness contracted there; what was the total number of recruits in training at this camp; and what were the arrangements for dealing with cases of sickness, including medical staff and hospital accommodation.—Mr. TENNANT (in a written answer) replied: The average strength at the Oswestry camp during the last six months has been 9269. During that period there have been 1099 admissions to hospital and 27 deaths have taken place. The arrangements for dealing with cases of sickness and the scale of hospital accommodation are on the same scale as at other camps.

The Motor-car Licence Duty.

Mr. KING asked the Chancellor of the Exchequer to state, in connexion with the increased taxation on motor-cars, when it was proposed that this tax shall be payable; and whether it would be collected by and paid into the accounts of the local authorities.—Mr. MCKENNA replied: No alteration is proposed as regards the date on which motor-car licence duty is payable, but a supplementary licence for the remainder of the current calendar year will have to be taken out before June 30th or August 15th for cars, &c., which it is proposed to use after these dates. The new duties will, like the existing duties, be collected by the local authorities on behalf of the Exchequer.

Mr. D. M. MASON: Does the tax apply only to cars which are used?—Mr. MCKENNA: I should imagine the local authority would insist upon the surrender of the number of the car in order to prevent it being used.

Mr. WING: Does the answer of the right honourable gentleman apply to commercial cars?—Mr. MCKENNA: No.

MONDAY, APRIL 10TH.

Non-poisonous Dopes.

Replying to Mr. ROWLANDS, Mr. BRACE (Under Secretary for the Home Department) said: The Department are issuing all the non-poisonous dopes which they possess, and if they can possibly get a larger supply they will discontinue the poisonous. I can assure my honourable friend that we are doing everything we can in the matter.

Motor-car Tax.

Mr. MCKENNA (Chancellor of the Exchequer) informed Mr. ROWLANDS that he was considering whether exemption from the new duty could not be granted for motor-cars which were exclusively used for such purpose as the Red Cross, Special Constabulary, Voluntary Aid Detachment, and other voluntary work for the Government.

Sir FORTESCUE FLANNERY: Will the right honourable gentleman make a similar concession with regard to cars of registered medical practitioners necessary for carrying on their work?—Mr. MCKENNA: I should like to have notice of any question with regard to making concessions on the Budget.

Territorial Medical Officers.

Mr. LYNCH asked the Under Secretary for War whether he had heard of any discontent amongst Territorial medical officers, especially those attached to regiments; and whether he would consider the appointment of a Territorial medical officer of position and long service as such on the staff of the Director-General at the War Office and the insertion in the Army List of a seniority list of the officers of the Territorial medical service.—Mr. TENNANT wrote in reply: The Territorial regimental medical officers joined the service for the specific purpose of doing the duties in which they are now engaged and it is unlikely that they would be discontented if called upon in time of war to assume responsibilities for which they engaged in time of peace. Promotion of regimental medical officers is regulated by time service. Other Territorial Force medical officers are promoted by selection and seniority in their units. In these circumstances there is no need for a seniority list. The Director-General has on his staff an officer who has considerable experience of the Territorial Force.

Mr. LYNCH asked the right honourable gentleman whether a lieutenant-colonel of the Territorial medical service of many years' service received the same remuneration as a temporary lieutenant-colonel appointed since the commencement of the war; if so, whether this was in accordance with the spirit of the War Office undertaking that such officers should receive the pay of the corresponding rank as laid down by the Pay Warrant, 1914, for officers of the Royal Army Medical Corps; whether in the case of such officers their experience and their services were held to make them more valuable; and whether the higher rate of pay of 35s. laid down in the warrant for lieutenant-colonels of the Royal Army Medical Corps would be given them after five years' service in the ranks.—Mr. TENNANT (in a written answer) replied: Yes, sir, these officers are treated in accordance with the undertaking referred to. Unmobilised service in the Territorial Force cannot be held to count towards the higher rate of pay as if it were full-pay service in the Regular Army. If any Territorial Force lieutenant-colonels give the necessary amount of embodied service they will be entitled to the higher rate of pay.

WEDNESDAY, APRIL 12TH.

Medical Men and Increased Motor Licences.

Sir CLEMENT KINLOCH-COOKE asked the Chancellor of the Exchequer whether it was proposed to make any concession to medical men in respect of the increased licences on motors and motor cycles.—Mr. MCKENNA replied: The existing concession under which registered medical practitioners pay only half rates will extend to the new duties.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.

LINDSAY, JOHN KERR, L.R.C.P. & S. Edin., L.F.P.S. Glasg., has been appointed a District Medical Officer by the Bristol Board of Guardians.

TURNER, W., M.S. Lond., F.R.C.S. Eng., has been appointed Surgeon to In-patients at Westminster Hospital.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).
When the application of a Belgian medical man would be considered the advertisers are requested to communicate with the Editor.

BATH, WINSLEY SANATORIUM.—Assistant Resident Medical Officer, unmarried. Salary £250 per annum, with board, residence, and laundry.

BELGRAVE HOSPITAL FOR CHILDREN, Clapham-road, S.W.—Resident Medical Officer for six months. Salary at rate of £100 per annum, with board, residence, and washing.

BRISTOL GENERAL HOSPITAL.—House Physician for six or three months. Salary at rate of £175 per annum, with board, residence, &c.

BRISTOL ROYAL INFIRMARY.—House Physicians and House Surgeons. Salary at rate of £120 per annum, with board, apartments, and laundry.

BROOK WAR HOSPITAL, Shooter's Hill, Woolwich.—Resident Medical Office. Salary £1 daily, with board and residence

BURNLEY, VICTORIA HOSPITAL.—Female House Surgeon. Salary £160 per annum, with residence, board, and washing.

BURY INFIRMARY.—Senior House Surgeon. Salary £250 per annum, with board, residence, and washing.

CAMBRIDGESHIRE ASYLUM, Fulbourn, near Cambridge.—Junior Assistant Medical Officer, unmarried. Salary £200 per annum, with board, lodging, washing, and attendance.

CHESTERFIELD AND NORTH DERBYSHIRE HOSPITAL.—Second House Surgeon. Salary £150 per annum, with board, apartments, and laundry.

COBHAM, SURREY, SCHIFF HOME OF RECOVERY, Knowle Hill Park.—Resident Surgical Officer for six months. Salary at rate of £200 per annum, with board, lodging, and washing.

DERBY, DERBYSHIRE ROYAL INFIRMARY.—House Physician and Casualty Officer. Salary £200 per annum, with board, residence, &c.

FEDERATED MALAY STATES.—Female Medical Officer. Salary £360 per annum.

GALWAY HOSPITAL.—Resident Medical Officer and Compounder of Medicine. Salary £100 per annum, with apartments and rations.

GREAT NORTHERN CENTRAL HOSPITAL, Holloway-road, N.—House Physician for three months. Salary at rate of £100 per annum, with board, residence, and laundry.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton.—House Physician for six months. Salary 30 guineas.

LEEDS PUBLIC DISPENSARY.—Female Resident Medical Officer. Salary £130 per annum, with board, residence, and laundry.

LIVERPOOL, TOWNSHIP OF TOXTETH PARK POOR-LAW INSTITUTION AND INFIRMARY.—Assistant Resident Medical Officer. Salary £300 per annum, with board, washing, and apartments

LIVERPOOL, URBAN DISTRICT COUNCIL OF WATERLOO-WITH-SEAFORTH.—Medical Officer of Health and School Medical Officer. Salary £130 and £100 per annum respectively.

LONDON HOSPITAL.—Two Vacancies on Assistant Obstetric Staff.

LONDON TEMPERANCE HOSPITAL, Hampstead-road, N.W.—Assistant House Surgeon for six months. Salary at rate of 120 guineas per annum.

MANCHESTER, HULME DISPENSARY, Dale-street, Stretford-road.—House Surgeon. Salary £250 per annum, with apartments, attendance, coal, and gas.

MANCHESTER NORTHERN HOSPITAL FOR WOMEN AND CHILDREN, Parkplace, Cheetham Hill-road.—Female House Surgeon. Salary £120 per annum, with apartments and board.

MANCHESTER ROYAL INFIRMARY.—Resident Medical Officer and Resident Surgical Officer. Salary £225 per annum each. Also Assistant Resident Surgical Officer, Accident Room House Surgeon, and Resident Medical Officer (Central Branch). Salary £200 per annum in each case.

NEW HOSPITAL FOR WOMEN, Euston-road, N.W.—Female Temporary Assistant Surgeon for six months.

NEWCASTLE-UPON-TYNE, ROYAL VICTORIA INFIRMARY.—Four Resident House Physicians, Four Resident House Surgeons, Resident Accident Room House Surgeon, Resident House Surgeon to Aural and Ophthalmic Department, Resident House Surgeon to Skin and Gynæcological Department, and Resident House Surgeon to Outpatient Dressing Department.

NORTHAMPTON GENERAL HOSPITAL.—Two House Surgeons. Salary £150 per annum each, with apartments, board, washing, and attendance.

PUTNEY HOSPITAL, Lower Common, S.W.—Resident Medical Officer. Salary £150 per annum, with rooms, board, and laundry.

QUEEN'S HOSPITAL FOR CHILDREN, Hackney-road, Bethnal Green, E.—House Surgeons for six months. Salary £100 per annum, with board, residence, and washing.

ROCHESTER, ST. BARTHOLOMEW'S HOSPITAL, Kent.—Senior Resident House Surgeon. Salary at rate of £300 per annum.

SALISBURY GENERAL INFIRMARY.—Assistant House Surgeon, unmarried. Salary £100 per annum, with board, lodging, and washing.

SHEFFIELD, JESSOP HOSPITAL FOR WOMEN.—Female Junior House Surgeon, unmarried. Salary £80 per annum, with board, residence, and laundry.

SHEFFIELD ROYAL INFIRMARY.—House Physician. Salary £120 per annum, with board and residence.

SOUTHAMPTON FREE EYE HOSPITAL.—House Surgeon. Salary £100 per annum, with board, lodging, and laundry.

VENTNOR, ISLE OF WIGHT, ROYAL NATIONAL HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST.—Assistant Resident Medical Officer.

VICTORIA HOSPITAL FOR CHILDREN, Tite-street, Chelsea, S.W.—House Surgeon. Salary at rate of £200 per annum, with board and lodging.

WARWICKSHIRE AND COVENTRY JOINT COMMITTEE FOR TUBERCULOSIS.—Resident Medical Officer for Bramcote Sanatorium, near Nuneaton. Salary at rate of £250 per annum, with board, &c.

WEST HAM AND EASTERN GENERAL HOSPITAL, Stratford, E.—House Physician.

WINCHESTER, ROYAL HAMPSHIRE COUNTY HOSPITAL.—Female Assistant House Surgeon. Salary £100 per annum, with residence, board, and washing.

THE Chief Inspector of Factories, Home Office, London, S.W., gives notice of a vacancy for a Certifying Surgeon under the Factory and Workshop Acts at St. Faith's, in the county of Norfolk.

Births, Marriages, and Deaths.

BIRTHS.

COX.—On April 9th, at 8, Ellerdale-road, Hampstead, to Dr. and Mrs. R. J. H. Cox, C.M.S., Bannu, N.W.F.P., India, a daughter.

DYKES.—On March 28th, at the Nursing Home, College-avenue, Maidenhead, the wife of T. Campbell Dykes, L.D.S., Dental Surgeon, of a daughter.

REICHARDT.—On April 4th, at Dorset House, Ewell, Surrey, the wife of E. N. Reichardt, M.D. Lond., of a son.

WHEATON.—On April 9th, at Rastell-avenue, Streatham-hill, S.W., the wife of S. W. Wheaton, M.D. Lond., F.R.C.P. Lond., of a daughter.

MARRIAGES.

DENHAM—BRIGGS.—On April 11th, at Trinity Presbyterian Church, Kensington, Captain Charles Holmes Denham, R.A.M.C., to Irene, youngest daughter of the late James Cronshaw Briggs, of The Firs, Cheadle, Cheshire.

HARTY—CLARK.—On April 8th, at All Saints Church, Notting-hill, John Percy Ingham Harty, M.B. Irel., F.R.C.S. Eng., Captain, R.A.M.C. (T.), to Helen Dorothy, second daughter of Mr. and Mrs. J. G. Clark, of Ladbroke-gardens, W.

JOHNSTONE—GRAHAME.—On April 4th, at St. Columba's, S.W., Thomas Johnstone, M.D. Edin., M.R.C.P. Lond., of Harrogate, to Agnes Mary Grahame, of Ripon, daughter of the late John Anthony Grahame, of Westminster and Sussex-gardens, W.

SMITH—ACKERLEY.—On April 6th, at St. Matthew's Church, Surbiton, Austin Nimmo Smith, Captain, R.A.M.C., to Muriel Alice, daughter of Dr. R. Ackerley, of Llandrindod Wells.

SMITH—MALLINSON.—On April 11th, at Walthamstow, Philip Smith, Captain, R.A.M.C., to Evangeline Dorothea, younger daughter of William Mallinson, J.P., of The Limes, Walthamstow.

DEATHS.

BLADES.—On April 9th, at 182, Clapham-road, Charles Corbett Blades, M.D., in his 82nd year.

BRICE.—On April 5th, at Swansea, Major Ernest Brice, R.A.M.C., M.R.C.S., aged 52 years.

COLE.—On April 11th, of wounds received on March 22nd, Major A. H. Cole, F.R.C.S., aged 46 years.

PHELPS.—On April 8th, at Baxter-gate, Loughborough, Philip Phelps, M.R.C.S. Eng., F.R.C.P. Edin., L.M., aged 63 years.

POWELL.—On April 5th, H. FitzGerald Powell, M.D. St. And., F.R.C.S. Edin., Surgeon, Throat Hospital, Golden-square, W.

KILLED ON DUTY.

NICHOL.—On April 5th, accidentally killed while flying at night on the North-East Coast of England, John Nichol, aged 22. Lieutenant, Royal Scots Fusiliers, and Flying Officer, Royal Flying Corps, second son of Dr. and Mrs. Nichol, of Margate.

N.B.—A fee of 5s. is charged for the Insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

CHOLERA IN THE MALAY STATES.

REPORTS for the year 1914 on the States of Kedah, Perlis, Kelantan, and Trengganu have been laid before the Houses of Parliament. The territories in question are portions of the Malayan Peninsula not included in the Federated Malay States, but the rights of their protection, administration, and control were transferred by Siam to Great Britain by the Anglo-Siamese Treaty of March 10th, 1909. Kedah, which lies on the west coast of the Peninsula, and includes the Langkawi group of islands, has an area of 3800 square miles and an estimated population of 250,000. The capital is Alor Star, eight miles inland on the Kedah River, with a population of about 12,000. There are 38 British officials employed in the public works, survey, police, and medical departments. The acting British adviser to the Kedah Government is Mr. L. E. P. Wolferstan, whose report gives special attention to the outbreaks of cholera which have occurred in the State from 1907 to 1914. He quotes the following extracts as to these from a report made by Dr. A. L. Hoops: "First epidemic (August to September, 1907). The disease began after a long spell of dry weather in what is usually a wet season. 333 cases were recorded, and 247 deaths. Probably at least double the number of cases and deaths occurred. The epidemic did not spread much outside Alor Star and Kuala Kedah. Second epidemic (March and April, 1908). This was more widespread; 125 cases were reported from Kuala Muda district out of 686, with 541 deaths. Third epidemic (February to July, 1911). 1211 cases recorded with 966 deaths. Cases were better reported than formerly. It is calculated that at least 1500 deaths were caused by the disease. Alor Star and environs suffered severely. Most of North Kedah was attacked, and Langkawi Island suffered for the first time. Fourth epidemic. This really started in November, 1913, with 11 cases in Alor Star and Kuala Kedah. Unlike previous outbreaks, it began after an excellent wet season and before the rains ceased, but only became serious when drought set in. 2196 cases were recorded and 1502 deaths. Few places escaped; the disease spread to Kuala Muda, in South Kedah, and up stream to Baling. Undoubtedly there was a good deal of concealment, mainly in Kuala Muda and Baling districts. Though the deaths in these districts exceeded the deaths of the year before by 1051, only 325 were returned as due to cholera."

Mr. Wolferstan's report proceeds as follows:—"It is a conservative estimate that there have been 5500 deaths from cholera in Kedah in the past eight years out of a total of 37,000 from all causes—that is to say, cholera is responsible for nearly 15 per cent. over the whole period. In 1914 one-third of the deaths were due to cholera. The State surgeon says that he is convinced cholera has not been imported into Kedah, though some medical textbooks give it as a truism that cholera is an imported disease. None of the outbreaks in Kedah has been traced to an imported cause. Conditions in Alor Star favour the life of the cholera bacillus owing to the nature of the river and shallow well water, while the clay subsoil forms an ideal culture medium for its growth. Dr. A. J. Stanton, of the Medical Institute, Kuala Lumpur, visited Alor Star in April, 1914, and on his return to Kuala Lumpur made some interesting experiments with water drawn from the Wan Mat Canal, which is practically Alor Star river water. Emulsions of cholera bacilli from a Kedah case were added to samples of this water; it was found that even when the water was previously sterilised vibrios grew and multiplied rapidly in it. On the contrary, emulsions added to Kuala Lumpur tap-water (unsterilised) rapidly died out. Dr. Stanton concludes that Alor Star water itself contains ingredients favourable to the spread of cholera. He forms the hypothesis that there is within certain areas in Kedah a natural reservoir of virus, the renewed activity of which is derived from some special combination of circumstances. During the epidemic drinking of river water was forbidden; no bathing water was allowed to be carried to houses. Sikh guards were detailed to enforce restrictions. In 1911 an iron catchment area had been erected for collecting rain-water, with tanks holding 480,000 gallons of water. Drinking water was supplied from the tanks, and when this source failed 70 tons of drinking water were brought daily from Penang. Part was pumped into tanks at Kuala Kedah for use of surrounding villages. For the railway coolies special tanks were constructed and water boiled and supplied from them. An assistant surgeon and four dressers were sent by the Railway Department to assist.

Dr. J. H. Tennent, from the colony, was lent to help in combating the disease. The State surgeon himself fell a victim, and was laid up for a month. ..... At Christmas-time cholera started in the Wong; this followed on a debauch on toddy amongst a number of Tamils; 21 cases in all occurred." The report goes on to record the completion of new waterworks, adding the comment: "That cholera will not break out in Alor Star again in the future can hardly be hoped, but, if the same success attends the provision of a good supply of water in Alor Star as was the case in Malacca some years ago, it may be hoped that the disease will never assume an epidemic form of considerable magnitude."

The report on the State of Perlis (area 300 square miles, population 32,740) mentions that cholera broke out in March, 1914; there were 45 cases, with 40 deaths. The outbreak came to an end in June. The infection came from Kedah. There appear to have been no corresponding outbreaks either in the State of Kelantan or the State of Trengganu.

The principal diseases, apart from cholera, prevalent in Kedah during the year were dysentery, ankylostomiasis, and malarial fever. In Perlis the chief ailments treated in the Government dispensary were malaria and skin diseases. In Kelantan the diseases mostly causing admission to hospital were dysentery (80), beri-beri (33), malaria (124), venereal diseases (172), and ankylostomiasis (40). Of 14,073 out-patients, 1115 Malays and 345 of other nationalities were treated for venereal diseases. Mr. C. N. Maxwell, the British Agent in Trengganu, observes in his report: "The Bundi Tin Mining Syndicate employ a qualified medical man on the mine in Ulu Kemaman. There is no other qualified doctor in the State (which has an area of 6000 square miles and a population of 154,037). There is a considerable amount of disease, and I am occasionally informed of deaths from cholera, small-pox, fever, and dysentery. A large number of people suffer from skin disease, and many of the children are disfigured with yaws and other eruptive complaints. Sanitation does not exist. Fortunately there were no serious epidemics during the year. I am occasionally asked for medicines, which I provide in simple cases. A matter to which I have drawn the Sultan's attention is the absence of any proper burial-grounds. Corpses are buried anywhere and everywhere, and Kuala Trengganu is one vast burial-ground with graves at every few yards."

NOTIFICATION FEES AND THE CERTIFICATE QUESTION.

A CORRESPONDENT writes: "In the matter of opposing the proposed reduction in notification fees (from 2*s.* 6*d.* to 1*s.*), this is not a time for attacking the much-harassed medical profession. If we agree to this reduction, no doubt in a few years we shall be compelled, as in the case of notification of births, to give all certificates without any payment. I foresee the time when 2*s.* 6*d.* will be regarded as a munificent fee for a doctor in general practice. Our expenses are increasing by leaps and bounds, while our emoluments are one by one disappearing." We have not quite the same gloomy forebodings as the writer of this letter. That a medical man would give his services, to say nothing of a written record of them in the shape of a certificate, gratuitously was commonly assumed a few years ago. Our legislators now know a little better. During the war the medical practitioner is certainly bound to suffer, and the efforts of all must be directed towards equalising a general burden. The prospects of practice after the war seem to us brighter than they do to our correspondent.

MR. H. G. WELLS AND DOCTORS.

To the Editor of THE LANCET.

SIR,—What is the matter with Mr. Wells? In the *Daily Mail* of April 8th he says the Government has refused the offer of Mr. Barker to treat injured men in the present war. May I point out that by S. 36 of the Medical Act, 1858, it is provided that "no person shall hold any appointment ..... in the Military or Naval Service ..... unless he is registered under this Act." Cannot Mr. Wells induce Mr. Barker to take a registrable medical diploma?

Mr. Wells next describes the medical profession as a "trade union." I wish he would make it a union! Many doctors now find how difficult it is to obtain a living, because so many *well-to-do* people obtain *free* treatment from Poor-law infirmaries, voluntary hospitals, municipal fever hospitals, sanatoria for consumptives, free vaccination, free school examination, and cheap panel doctors. Would any skilled craftsman have anything to do with schemes which supplied free labour to the public? Would they agree to work for the same wages on Sundays and on night work? Not likely. Would skilled union craftsmen agree to give their services at a few shillings a year on a panel system? Mr. Wells is in error in referring to the "atrocious incapacity of the general practitioner"—a term which, as a matter of fact, includes nine-tenths of all doctors. Let Mr. Wells help to improve the financial position of doctors by having them paid for their services to the public, and not by a payment of about 1*d.* a week, gross, as he agrees to pay panel doctors. If he agrees to start a medical trades union he will have my active help, and the practical gratitude of all doctors. I am, Sir, yours faithfully,

Liverpool, April 10th, 1916. ROBERT R. RENTOUL.

RIDDING HOUSES OF INSECTS.

A RECENT issue of the *Scientific American Supplement* gives an ingenious method of clearing houses from summer swarms of small insects. Lighted lamps are placed in convenient places, and as the insects gather around the lights they are rapidly and effectively collected and disposed of by holding the nozzle of a vacuum cleaner near the lamp. Presumably the lamp referred to should be an incandescent electric bulb or a flame well protected by a glass chimney, otherwise the suction caused by the cleaner would possibly extinguish the flame.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL MICROSCOPICAL SOCIETY, 20, Hanover-square, W.

WEDNESDAY.—8 P.M., Prof. B. Moore: Early Stages in the Evolution of Life.—Mr. F. M. Duncan: Studies in Marine Biology.—Mr. J. W. Purkiss: Some Suggestions regarding Visual Efficiency in the Use of the Microscope and other Optical Instruments.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye. Dr. Simson: Diseases of Women.

TUESDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Addison: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations. Dr. Simson: Diseases of Women.

THURSDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye.

SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Eye Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY.—Clinics:—10.30 A.M., Surgical Out-patients (Mr. E. Gillespie). 2.30 P.M., Medical Out-patients (Dr. T. R. Whipham); Gynæcological Out-patients (Dr. Banister). 3 P.M., Medical In-patients (Dr. R. M. Leslie).

TUESDAY.—2.30 P.M., Surgical Operations (Mr. Carson). Clinics:—Medical Out-patients (Dr. A. G. Auld); Surgical Out-patients (Mr. Howell Evans); Nose, Throat, and Ear Out-patients (Mr. C. H. Hayton). Radiography (Dr. Metcalfe). 3.30 P.M., Medical In-patients (Dr. A. J. Whiting).

WEDNESDAY.—Clinics:—2.30 P.M., Throat Operations (Mr. C. H. Hayton). Children Out-patients (Dr. T. R. Whipham); Eye Out-patients (Mr. R. P. Brooks); Skin Out-patients (Dr. H. W. Barber). 5.30 P.M., Eye Operations (Mr. R. P. Brooks).

THURSDAY.—2.30 P.M., Gynæcological Operations (Dr. A. E. Giles). Clinics:—Medical Out-patients (Dr. A. J. Whiting); Surgical Out-patients (Mr. Carson); Radiography (Dr. Metcalfe). 3 P.M., Medical In-patients (Dr. R. M. Leslie).

FRIDAY.—2.30 P.M., Surgical Operations (Mr. Howell Evans). Clinics:—Medical Out-patients (Dr. A. G. Auld); Surgical Out-patients (Mr. E. Gillespie); Eye Out-patients (Mr. R. P. Brooks).

THE THROAT HOSPITAL, Golden-square, W.

MONDAY.—5.15 P.M., Special Demonstration of Selected Cases.

THURSDAY.—5.15 P.M., Clinical Lecture.

For further particulars of the above Lectures, &c., see Advertisement Pages.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, April 12th, 1916.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
April 6	30·140	N.E.	...	70	47	39	39	41	Overcast
" 7	29·924	N.E.	0·27	66	48	36	38	39	Cloudy
" 8	30·142	N.	...	101	54	39	40	43	Fine
" 9	30·100	W.	...	105	56	41	42	46	Cloudy
" 10	30·030	N.	...	94	58	41	41	45	Fine
" 11	29·736	S.W.	0·07	87	53	45	46	47	Raining
" 12	29·590	S.W.	0·19	69	54	42	45	45	Raining

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The Milroy Lectures

ON

INFANTILE MORTALITY AND THE RELATIVE PRACTICAL VALUE OF MEASURES DIRECTED TO ITS PREVENTION.

Delivered before the Royal College of Physicians of London

BY S. G. MOORE, M.D. VICT., D.P.H. ENG. CONJ.,

MEDICAL OFFICER OF HEALTH AND LECTURER IN PUBLIC HYGIENE AND SANITATION, TECHNICAL COLLEGE, COUNTY BOROUGH OF HUDDERSFIELD.

LECTURE I.

Delivered on March 9th.

MR. PRESIDENT AND GENTLEMEN,—Rather the importance of the subject proposed for the lectures than any personal merit doubtless led to my election to the Milroy lectureship for 1916. I am content that it should be so, but I will feel still more contented if only I can discharge the duties of the office with some degree of adequacy. I trust that I am duly sensible of the honour attaching to the position, and I tender my best thanks to the Royal College of Physicians of London for the opportunity to make the attempt.

INTRODUCTORY REMARKS.

No human being can contemplate death without sorrow and repugnance, yet these feelings do not extend equally to all deaths. They are influenced by two different kinds of circumstance. On the death of an aged person—one perchance whose span of life has extended to the "sans everything" stage—sadness is mitigated, and we do not experience those feelings of dismay and anguish which burden our souls on the death of one cut off in the bloom of vigorous youth, or in the innocence of infancy or childhood. Our depression is alleviated also when we know that a death has resulted from a cause either inevitable or incurable; at least so far as our present stage of knowledge of these things enables us to judge, a cause which lies beyond the present scope of both preventive and curative medicine, to which, from the practical point of view, these two designations must be applied. Examples of such mortality origins all too readily occur to the mind. How different are our feelings, how much more poignant is our sorrow on the contemplation of a death from a cause we know to have been preventable!

Animated by sentiment alone, it is probable that those who are not immediately concerned are most shocked at the death of some youth cut off in the early promise of active, enthusiastic, earnest, and useful life. Their imaginations are not so readily stirred by the deaths of the very young. But those whose conceptions are founded upon and dominated by reason (as ours should be) will view with the greatest concern the removal of the youngest life—of that being around whom may be centred hopes, aspirations, and plans maternal in their scope. The greatest possibilities appertain to the youngest among the human race. Limitations come to us and accumulate with each advancing year. At 15 or 20 years of age part of life lies already in the past—experience and environment must have set some bounds. To the infant every human possibility lies open.

I have often felt, and said, that from its very nature, from the character of his work, the life of a practitioner of medicine or surgery must be sad—must be tinctured with sombre hues. I know nothing more painful, nothing more depressing, than an understanding contemplation of the subject of infant mortality as it occurs among us to-day. I originally wrote the word "repellent." It might with propriety be applied, yet it does not seem altogether appropriate, for the reason that the experience of the past few years justifies hope, promises reward for intelligently directed work, and also because one may perceive on all hands a growing understanding and an increasing recognition of the fact that here, in work against infantile mortality, is alike a duty and an opportunity.

In the case of the death of an infant from a disease or condition which might have been avoided there is a combination of both those circumstances which enhance the terrors of death—not in old age, nor in mid-life, nor as the result of its own mistakes, ignorance, or misconduct; not from an inevitable cause, nor from one only evitable by great exertion, great skill, at great expense, or the exercise of the highest knowledge, but in the first year of life, almost before the dawn of consciousness; and as the result of ignorance, carelessness, and indifference alike on the part of the parents and the State; far too often, as we will see—in scores of thousands of cases—are these innocent helpless human beings destroyed by agencies which *come to them* from their external environment.

THE INFANT'S RIGHT TO LIVE.

The preventable deaths of infants call for attention from a point of view which, amid more obvious and more practical aspects of the subject, appears either to be lost sight of or else to be taken for granted. Yet from its importance—because it is basic, at the root of the matter—it needs to be plainly set forth and to be constantly borne in mind. A newly born child arrives in the world endowed with certain elemental natural rights, quite apart and distinct from any legal right to property which it may inherit. Because an infant is brought into this life without any volition on its own part these primitive rights come into existence. Every infant holds them directly from those whence it derives its being, that is to say, from its mother and father; and it holds them indirectly from the community, or State into which it is born. The existence of the direct rights of the infant from its immediate parents in no way abrogates its indirect rights from the social organisation as a whole.

What are these rights? All may be comprised in a single statement. The right to a reasonable chance to survive to such an age-period that its own action may influence its destiny, and to a reasonable degree of protection from those external influences which imperil or destroy its life. To furnish an example: Infant deaths from "summer diarrhœa" are practically absent from the returns in winter. They are numerous in summer. Infant deaths from bronchitis and pneumonia are practically absent from the returns in summer. They are numerous in winter. Therefore, in these forms death comes to infants from external conditions. Every infant has the right—a perfect inalienable right, held both from its parents and from the State—to be protected from these and also from all other external causes of death. That is the basic natural right of every child born into this world.

While surely all will agree to the above so far as the parents are concerned, some may doubt that the same is true as regards the community. Because there are criminals in all communities (and for many other reasons) society organises itself. Having done so, how can it stand aside to disclaim this particular responsibility. It is manifestly a criminal thing to permit death to reach a helpless being from its external surroundings and from preventable causes, whether arising through ignorance, or carelessness, or apathy. To me this is a truth which needs to be impressed upon the minds and consciences of all alike, from the lowest to the highest in the land, and particularly upon those who wield power.

I have been led to attempt the above enunciation of the primitive rights of newly born human beings as the result of reflecting upon certain writings and speakings. There are men whose pens and voices hold authority, who express views having a very distinct tendency to militate against work undertaken for the purpose of alleviating the sufferings and preventing the deaths of babies. This may seem strange and incredible. *A priori* it is both. To all who have taken interest in the subject during the last few years, however, this peculiar phenomenon is well known. Moreover, these persons may be divided into two schools—one merely ignorant, prejudiced, careless, and, it may be, parsimonious, and the other trained, learned, scientific.

The former express their thoughts somewhat thus wise: "The poor little devils are born to lives of misery. They will never do any good. Let 'em die." (This is a reproduction of an actual statement by a person holding some authority in the community.) The latter, however, are alike more reprehensible and more dangerous. Their inhuman doctrines are cloaked beneath the guise of science. They proclaim abroad that heredity counts—that environment matters little—acquired characters are not transmitted, and therefore most, if not all, of the labour in this field of endeavour is vain.

Hence the need to proclaim insistently the normal rights of infancy and childhood. Because if these be recognised and conceded, then indeed is vain the clamour both of

those who would "let 'em die" and of those who announce the ultimate futility of efforts directed along lines which are intended to promote the health and general welfare of the infant population.

RETROSPECT.

Your permission will be granted me, I trust, to turn now to a brief retrospect of the Huddersfield special work in this matter. I hope that you will arrive at the conclusion that it is not without interest.

I. *1902–3.*—Scrutiny of the returns of deaths from all causes in the sanitary district with the view to the selection of a disease, or group of diseases, likely to repay special measures for its (or their) prevention.

II. Rejection of tuberculosis, cancer, the common infectious diseases, and alcoholism and its sequelæ for reasons which may be surmised from a consideration of those which led to the selection of infant mortality. These were five in number—namely: 1. The numbers of deaths of infants constituted so large a proportion of the total deaths that any substantial reduction of the infant mortality figure would effect a material reduction of the general death-rate. 2. The causes of deaths of infants in quite a considerable proportion were manifestly preventable. 3. The lives to be saved were at the threshold of existence. 4. When an infant dies, it is through no fault of its own; it appeals from its helplessness and its innocence. 5. The cost promised to be almost negligible. (The rejected subjects were either costly; already dealt with; difficult, on account of the obscurity of their causes, or for other reasons; affected too small a number of persons; or resulted from the actions of the sufferers. The resources of the sanitary authority were not unlimited; selection was necessary.)

December, 1903.—Preliminary report to sanitary authority, reviewing the subject generally.

June, 1904.—Detailed report to sanitary authority, giving a closer analysis of the problems, and setting forth measures already in operation in this connexion in this country, and also in France and Germany, and in particular giving a complete account of the work of Morel de Villiers, which from its excellent provisions and *absolute success* commands an importance to which I propose to direct attention later.

April, 1905.—Final approval by the sanitary authority of a scheme of work against infant mortality based on the above-mentioned reports, and including the voluntary notification of births to the medical officer of health, and the visitation *in their homes* of *all* newly born infants *immediately* after birth by women doctors, followed by voluntary workers. The officials were informed that no inquiry would be made as to how many visits they paid. They were not to be in a hurry, but they were instructed to spare neither time nor effort in the endeavour to be sure before terminating the visit that the mother was instructed fully in the knowledge essential to the welfare of her offspring. Two forms of advice, "short" and "extended," were printed, and were to be left for the information of the mother.

1906.—Parliamentary powers requiring the notification of births to the medical officer of health granted to Huddersfield.

In the following year Parliament passed an adoptive Act enabling all sanitary authorities to require the notification of births to the medical officer of health. This differed from the Huddersfield Act in requiring the notification to be made within 36 hours of the birth, whereas in the Huddersfield clause the period was 48 hours. In 1915 the matter was completed by the passing of an Act which required such notifications to be made to the medical officers of health in every sanitary district in England and Wales.

It appears to be worth while to direct special attention to the period within which the notification must be made. Not within ten days (the normal period of attendance at a birth of a doctor or midwife) but within the minimum practical period—even 48 hours were deemed to be too long. The legislature considered this point and were satisfied of its necessity. That necessity remains, and indicates that the sanitary authorities should take advantage of the opportunity thus afforded to them for the earliest practicable action.

[The lecturer amplified the need. He insisted upon the importance of the following considerations: (*a*) The greatest number of infant deaths occur at the earlier ages. (*b*) The mother's mind is most receptive the earlier after birth advice is given. (*c*) Breast feeding is of the greatest importance. If the visit be delayed the milk may be gone. (*d*) It was under the old régime of advice by the "normal" attendants that the calamitous excess of infant deaths occurred.]

This account would be incomplete if reference were not made to the action of Mr. Benjamin Broadbent. During the period when my reports on this subject were under preparation and consideration he was chairman of the Huddersfield health committee. In November, 1905, he was elected to the mayoralty of the borough. He displayed very great interest in the subject, and helped in some of the translations from the French. On Nov. 10th, 1905, in his mayoral address to the council, he announced that he would make a birthday gift to each child born in his native village of Longwood (which is situated in the borough) during his year of office as mayor, on its attaining its first birthday. To this end he issued a promissory note to the amount of £1 sterling to each child at birth, payable on the infant's first birthday.

This action, from its novelty, attracted an amount of attention which neither Mr. Broadbent, nor myself by any means anticipated. The newspaper press in this country, and also in other English-speaking countries, gave very great prominence to his action in this respect, and I think that I may state, without exaggeration, that the whole movement for the prevention of infant mortality was thereby brought so prominently into the public mind that it received a degree of attention which it might not otherwise have received until much later, and gained an impetus which it has not since lost.

GENERAL REFERENCE.

It is undesirable for two reasons to attempt on this occasion a detailed account of what has come to be recognised as the subject of infant mortality. In the first place, time does not permit. However much one might condense the subject there is ample material for a "summer course" of lectures if all aspects of the subject were dealt with and even only the more direct problems connected with it were taken into account. In the second place, the work has been done so recently, so well, and with such detail that to re-cover the ground now were supererogatory. For several years past medical officers of health, both in special and annual reports, have written on the subject; eminent physicians (including obstetricians) have devoted special attention to this branch of medicine, and have contributed valuable writings to the medical journals, and last, but not least, Government departments have not only investigated and reported specially on the subject, but have given material encouragement in the form of grants to local authorities for the prosecution of actual work in this field.

Let it suffice for me to give the conclusions arrived at in the admirable and compendious reports by Dr. Newsholme, the principal medical officer of the Local Government Board. But before doing so let me refer to the notable fact that successive Presidents of the Board and other Cabinet Ministers have deemed the subject of an importance such as to call for Parliamentary and public attention. And also I would point out that our real governors—the actual arbiters of our national fate (at least I do so regard them); I mean those who direct the daily newspapers—have given prominence to the importance of the subject from the national point of view.

CONCLUSIONS ARRIVED AT IN THE LOCAL GOVERNMENT BOARD'S REPORTS ON INFANT MORTALITY.

From the Thirty-ninth Annual Report.

The Notification of Births Act and the appointment of health visitors have had influence beyond the districts in which the Act has been applied and health visitors have been appointed; for the public conscience has been aroused, and education, moral as well as mental, has rapidly progressed. The continuance of a high infant mortality in a given district involves the continuance of a centre of national weakness. Mortality in the first five years of life is very unequally distributed, the death-rate at these ages in some counties being twice as high as in others.

Excessive mortality in infancy implies excessive mortality in later life. English statistics show that counties having excessive infant death-rates also on the whole have excessive death-rates throughout the first 20 years of life, and that counties having low infant death-rates have low death-rates throughout the first 20 years of life, though the superiority is not so great at the later as at the earlier ages.

There does not appear to be sufficient foundation for the statement that prematurity to an increasing extent is a cause of mortality in the English experience. Every county and most districts whose experience when summarised as a whole show a low infant mortality have within their borders areas in which infant mortality is excessive. The same remark applies to towns which, as a whole have a low infant death-rate.

The subject of child mortality is of national importance. One out of three deaths at all ages occurs under five years of age, one out of five during infancy, and one out of nine total deaths at all ages occurs under three months of age. Infant mortality is the most sensitive index we possess of social welfare and of sanitary administration, especially under urban conditions.

A careful study of the death-rate in England and Wales during the last fifty years at each of the first five years of life leaves it doubtful whether any appreciably greater selection or "weeding out" is exercised by a heavier than by a lighter infant mortality. Any such effect, if it exists, is concealed behind the overwhelming influence exerted by the evil environment to which children are exposed in districts of high infant mortality. It is strictly correct therefore to say that a high infant mortality implies a high prevalence of the conditions which determine national inferiority.

There is no essential causal relation between a high birth-rate and a high rate of infant mortality. The statistics hitherto available for the counties considered in this report do not enable a definite statement to be made as to the influence on infant mortality of the non-domestic employment of mothers.

Infant mortality is always highest in crowded centres of population; but a high infant mortality can be avoided even under conditions of dense aggregation of population. The chief means for a low infant mortality are efficient domestic and municipal sanitation, good housing, and intelligent and painstaking "mothering." Infant mortality is highest in those counties where, under urban conditions of life, filthy privies are permitted, where scavenging is neglected, and where the streets and yards are to a large extent not "made up" or paved. Thus, local sanitary authorities are largely responsible for the continuance of excessive infant mortality, and until they fulfil satisfactorily their elementary tasks efforts in the direction of domestic hygiene can only be partially successful.

Breast feeding is the greatest natural protection against infant mortality. It is not a complete protection, in part because breast-fed infants are often exposed to excessive changes of temperature in air-polluted rooms, and in part because mothers frequently give their breast-fed infants other food of an unsuitable character.

The statistics given in this report emphasise the importance of more detailed investigation of all deaths occurring in infancy as a guide to administrative action. (This has been done in Huddersfield for many years.)

From the Forty-second Annual Report.

The recent fall in the infant mortality figure cannot be attributed merely to favourable climatic conditions. It can be claimed, with high probability, to be the result of improved sanitary and housing conditions, of more efficient municipal and domestic cleanliness, of education in hygiene, of increased sobriety of the population, and of the widespread awakening to the national importance of child mortality, with concentration on efforts of child welfare such as had never previously occurred.

The information as to housing and sanitation is very incomplete. Although the exact causes of excessive infant mortality are complex and vary in different towns, comparison between towns of low and those of high mortality brings out the irresistible conclusion that a very high proportion of the excess of mortality in the less favoured towns can be removed, if the appropriate social and sanitary improvements which are within reach are adopted. It is well known, that after a long series of years during which no appreciable sustained improvement occurred, a great decline in infant mortality has been experienced in recent years.

Geographical position and climatic circumstances have, within the area of England and Wales, only a minor influence on infant mortality, and particular local conditions special to certain limited areas or in certain social classes are responsible to a high degree for the variations which occur in the infant mortality rates.

Infant mortality is higher in urban than in rural areas. The chief apparent exceptions to this rule are large compact villages having urban characteristics, such as the mining villages in the county of Durham. Towns within the same county, sometimes within a few miles of each other, show widely divergent infant mortality rates. Size of town has no definite relationship to excessive infant mortality, this occurring irregularly in towns having a population over and under 50,000.

The infant death-rate for the year 1911, when the prevailing conditions favoured excessive infant mortality, was lower than that of past years with somewhat similar climatic conditions.

A high infant death-rate in a given community implies in general a high death-rate in the next four years of life, while low death-rates at both age-periods are similarly associated.

A consideration of the facts summarised above leads to the conclusion that high rates of infant mortality must depend very largely upon certain local conditions, which may be, and probably are, different for various towns and even for parts of the same town.

The relative importance of the many factors concerned in causing excessive infant and child mortality is difficult to assess; these factors are not identical for all districts. In this part of the present report special stress has been laid upon the factors of defective sanitation and housing, the removal of which is within the control of sanitary authorities. The industrial employment of married women must necessarily involve some neglect of the home, and especially of any young children. Conservancy systems of disposal of excreta are very commonly associated with excessive infant mortality. The smallest incidence of disease, especially of diarrhœal diseases, occurs usually in districts supplied with water-closets. In the history of several towns the conversion of a conservancy into a water-carriage system has been associated with a great reduction of mortality from diarrhœal diseases, whilst in other towns the continuance of conservancy systems has been associated with continued high diarrhœal mortality. Unpaved yards and streets and inefficient scavenging favour excessive infant mortality.

In towns where the general conditions are more satisfactory excessive infant mortality occurs in tenement and other small dwellings, especially where water is distant to fetch and remove, where cleanliness is consequently difficult, and where food cannot be satisfactorily stored.

Such relationship between large families and high infant mortality as is frequently found is in the main indirect, large families being most common among the poorest, who live under conditions unfavourable to child life. Infant mortality is excessive among the poor; it is low among the well-to-do. So far as is known, the proposition is chiefly applicable to those living under the usual conditions of town life.

Poverty is a direct cause of infant mortality where it induces malnutrition of mother or infant or where it implies that the mother cannot give adequate care to the infant. Poverty is also an important indirect cause of infant mortality. Its influence is exercised in the following, among other, ways: (*a*) Poverty is not infrequently associated with ignorance and carelessness. (*b*) With these are commonly associated overcrowding and uncleanliness. (*c*) Alcoholic habits frequently result from living under conditions of poverty, the converse also being true. Poverty, uncleanliness, overcrowding, alcoholic indulgence, and disease are closely inter-related in vicious circles, the starting point leading to excessive infant mortality not always being the same.

The importance of the personal factor in the prevention of infant mortality is very great. The abandonment of breast-feeding without adequate cause is a most important factor of excessive infant mortality.

The object of child-welfare work is to ensure that each parent has within reach accurate counsel as to the hygiene of childhood, and as to the general and domestic conditions necessary for ensuring its maintenance. From the standpoint of medicine this implies such advice as will conduce to the prevention of minor ailments, to their prompt discovery, and to that early treatment which is essential for the prevention of more serious disease.

The experience of organisations which supply food to necessitous expectant mothers appears to show that the condition of the mother before parturition has a definite influence upon her capacity for suckling. This alone is of sufficient importance to call for attention to the condition of the expectant mother.

From the Forty-fourth Annual Report.

A study of the incidence of mortality from childbearing in different counties, and still more of the extreme variations in this mortality in the county boroughs in individual geographical counties, shows that special local factors, other than topographical, must be chiefly concerned in causing local excesses of mortality from childbearing. The majority of the deaths of mothers from childbearing are caused by puerperal fever, hæmorrhage, and convulsions. Most cases of these conditions are well within the range of preventive medicine, including in this the early treatment of illness.

The prevention of early infant mortality is inseparable from that of maternal mortality in childbearing. Excessive mortality of mothers in childbearing means also an excessive proportion of stillborn infants, and an excessive proportion of deaths of infants in the early weeks after live-birth.

The quality and availability of skilled assistance before, during, and after childbirth are probably the most important factors in determining the remarkable and serious differences in respect of mortality from childbearing. The textile towns stand pre-eminent in the toll of life exacted from mothers in childbearing. It is likely that unsatisfactory midwifery bears an important share in producing this result. There must, however, apart from this be a close relationship

between factory work for married women and excessive mortality from childbearing. The experience of Merthyr Tydfil, of Swansea, and of Newport, Mon., shows that other factors may take the place apparently held by occupation in textile factories in producing excessive mortality from childbearing. Although the mortality from childbearing is generally excessive in those parts of England and Wales in which general sanitation is imperfect, in other parts of the country in which similar conditions prevail there is no such excess of mortality.

In order that official action may be taken for reducing maternal mortality and suffering in childbearing, measures must be adopted for ascertaining what cases need help. This condition can be fulfilled by: (*a*) The provision of skilled assistance at maternity centres, which is one of the best means of obtaining such information. (*b*) The notification of births, which provides essential information. (*c*) The notification of puerperal fever when made more effective. Hospital provision for the treatment of puerperal fever is most valuable in itself, as well as in securing more complete notification. (*d*) The collection of the statistics of hospital experience. (*e*) The provision of pathological aids for diagnosis, which will lead to the better diagnosis and treatment of many cases of illness in childbearing. Antenatal work by means of consultations and clinics, together with home visiting, should be organised.

A review of the position as to the distribution of midwives shows that in some areas the supply of midwives is inadequate to the public needs. A review of the work of inspection of midwives shows that this is done to a very varying extent in different counties and county boroughs.

REMARKS ON FOREGOING CONCLUSIONS.

The considered opinions in the Local Government Board's Reports on infant mortality demonstrate the thorough and painstaking manner in which the subject has been investigated by the Board. Of course, they command profound respect. As was inevitable, many of them are not new and many are self-evident. They enunciate clearly and precisely many points calling for attention, they amplify and define much, they fill gaps which were present in our knowledge, they correct erroneous opinions, they give prominence to important deductions calling to be made, they indicate useful lines of action, they recognise difficulties, and generally they are adequate and illuminating. They are so complete that there remain only for elucidation certain questions which can best be answered as the result of local investigation.

Naturally they are of varying importance. Perhaps the greatest service they render lies in pointing out, as they do, that sickness and death in infancy mean sickness and death in later life *pari passu*. The demonstration of the existence of "blots" in good areas, and of the existence side by side of areas of high and of low infant mortalities is of great significance. *Not climate, nor topography, nor municipal sanitation, but the lives, the habits of the mothers in the homes determine the difference.*

I venture to express the opinion that throughout these conclusions too much importance is given to general measures. Because infant mortality is a part only of the general death-rate, and because it is a component thereof which presents special characteristics, *particular* action is needed for its elimination—procedure *immediately* directed against those influences and conditions which are peculiarly inimical to the young. So much in passing; I must recur to this point.

A paragraph in the first report does not lead to the same conclusion as another in the second. They are not irreconcilable. The former tends to show that there is no evidence that the non-domestic employment of mothers is injurious. The latter is to the effect that such employment "must necessarily" do harm. I agree with both of these apparently divergent conclusions. I have reason to know for my own district that the former is well founded (I went into the question in 1908) and I am convinced that the latter must be true But to discuss the matter now would take too long. The influence of the industrial employment of women on family life generally, on childbearing, and on the health and lives of the infants and children has not yet received adequate attention. It should be insisted upon that the family is the unit of the nation. The sum of the families *is* the nation. This social question of female industrial employment is so great and so complex that no individual can investigate it adequately, even in a life-time, yet it needs investigation.

It may be worth while to express the opinion that the explanation of the apparent irreconcilability of these particular conclusions may be the following:—Under satisfactory conditions of family life generally, if in a section of a community the mothers worked all day away from the homes we would be able to show statistically that such employment caused an excessive infant mortality. But the existing conditions are so bad, the infant mortality is so excessive, the margin between the inevitable minimum (of something less than 40 deaths per 1000 births), and the mortality which actually prevails is so great that the effect of the mother's absence from her duties to her offspring is masked by the additional resources commanded by her wages.

I cannot readily accept the dictum that the experience of organisations which supply food to expectant mothers shows that the condition of the mother before parturition has a definite influence upon the capacity for suckling. On the face of it that conclusion appears to be unavoidable. How can an ill-nourished woman so develop during pregnancy that the mammary tissue shall become adequate? It is not to be expected. But we have yet to hear advanced the natural corollary that the uterine tissues of the under-nourished woman fail to increase and to function (except in such cases as come under the proper designation of asthenia). Moreover, we know that the trophic nerves are able to exercise a selective faculty. And also the oft-cited phenomena of the very low infant mortality observed during the Lancashire cotton famine and the siege of Paris increase the difficulty of acceptance of this opinion. True, other factors played a part in Lancashire and in Paris, but it is undoubtedly the case that infants were breast-fed by mothers who had undergone privation during pregnancy to an extreme degree, and who, moreover, were semi-starved during suckling. Nevertheless, all women generally, and all mothers in particular, hold the natural right at the hands of their fathers, husbands, and sons to be well nourished at all times. I merely deprecate this particular statement about nourishment and suckling lest it should form a reason, or an excuse, to withhold from the infant its natural and only proper food.

UNWANTED INFANTS.

There is a painful and difficult phase of the infant mortality question which, however, may not be left out of account. In a certain definite number of cases it is placed beyond doubt by the action of the parents that the infants are unwelcome and unwanted. It is not too much to say that their deaths are desired, perhaps not deliberately and consciously, but the result is the same—these babies die. I could cite many examples, but perhaps the best is afforded by a case of triplets. They arrived in the family of a labourer earning some 25*s*. weekly, where there were already six young children, the eldest still at school. The mother (none will wish to blame her) was overwhelmed by the unexpectedly large accession of family. She and her newly born infants were removed to hospital where they were placed under hygienic conditions as nearly perfect as may be. They had a small ward to themselves. Two experienced nurses were provided, one for day and the other for night duty. The mother had nursed all her other children at the breast. The first untoward incident in the case was the expression of unwillingness on her part to continue that excellent practice. However, she was induced to do so. Then the breast milk commenced to fail, and notwithstanding every effort—hygienic, dietetic, and therapeutic—to promote its secretion, it continued to diminish until at length it failed altogether. The smallest of the infants died after a few days' life, the next after a few weeks' life, and the third after a few months' life. The mother remained in the hospital until within a month of the death of the last survivor. During the whole of the period I never saw her take any interest whatever in the babies. She constantly expressed a desire to go home. She never nursed them after her milk stopped, showed no anxiety about them, nor even grieved at their deaths.

I would like, at this point, to mention a lesson that I learnt from one of the nurses in attendance. When, notwithstanding everything that was being done, the last baby seemed likely to die I said to the nurse, "Whatever is the matter? How is it that nothing seems to answer?" In a manner which showed that she had solved the problem, she replied, "The child has never been 'mothered,' and babies need 'mothering.'" I had frequently heard similar expressions of opinion, but there was something in the circumstances, or perhaps in the tones of the nurse's voice, or in

her manner, which caused me to realise, as I had not formerly done, the importance and significance of what the nurse called "mothering." No doubt robust infants can survive in its absence, but, on the other hand, it is well to recognise the fact that there is an inherent instinct and appetite in the young mammal to huddle and nestle against its mother's body, and to receive warmth and nourishment therefrom. This experience has led me to believe that in all cases these things are necessary for the well-being of infants, and that there may be certain cases where the lack of them determines the balance against the infant, even to the extent of causing its death.

In the case of the triplets I formed the opinion that the death of the first was probably inevitable, but that the other two would have survived had the mother been able to feed them in the natural way. I also came to the conclusion that the lack of milk was the result of the mother's mental condition.

The foregoing is an extreme example of a class. The lamentable fact may not be concealed that from time to time mothers are found who simply will not take the trouble to rear their infants. One recognises the fact with repugnance and expresses it with reluctance and regret. Yet it may not be gainsaid. I propose to show a photograph in the course of the next lecture of a simple form of incubator which we use in appropriate cases. Sometimes the loan is declined, and sometimes after it has been accepted the appliance is not used. Various excuses are made, but the truth is that the motherhood in a very small percentage of women is so feeble that they will not be at the pains involved. Such incidents are not confined to harassed, overworked, underfed women, nor to cases of illegitimates. It cannot be a popular proceeding to point out such facts, but their recognition is necessary to a proper understanding of some of the problems of infant mortality.

SHOCK AND THE SOLDIER.

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(*Concluded from p. 817.*)

What Should be Done with Shock Cases after Discharge from Hospital?

IN the treatment of the problem as to what should be done with such patients after their discharge from the special hospitals valuable information can be secured from the German reports, for the concessions made under Prussianism, notoriously devoid of sentimentality, must, at least, be based on necessity. In particular, I shall refer to an address entitled "Die Granatkontusion," and an article on "Hysterie und Kriegsdienst" by Gaupp, published in the *Muenchener Medizinische Wochenschrift* of March 16th, 1915, the latter of which is of more importance in this discussion. In the former, dealing with shell shock, he mentions air-pressure, poisonous gases, mechanical shock, and mental shock as contributory factors in the production of the "general injury," though undoubtedly the most important factor in the production of the class of disturbances with which this communication is specially concerned is *the mental shock of intense fright, especially following on prolonged fatigue and overstrain of the nervous system.* The primary importance of the mental effect in the causation of shock is further stressed by Schuster's observation that bomb explosions are less likely to produce disturbance in a sleeping soldier than in a man awake.

Gaupp gives detailed clinical pictures of these cases, in the great majority of which, though they vary remarkably, the essential underlying condition is remarkably similar. Reference to these descriptions will show that they conform to those published since by our own observers. For the most part the treatment adopted for all these states of shell concussion was suggestion. The prognosis for the acute symptoms is good: the more chronic symptoms, headache, dizziness, weariness, depression, &c., are dependent on the man's physical constitution, on the way in which he is handled, and on his patriotic sense. By an actual instance, he shows the difficulty of successful simulation of insanity, warning the specialist that the presentation of an altogether unusual clinical picture must be received with caution, and an objective report sought for.

In his other article on "Hysteria and War Service," Gaupp mentions that though the nervous condition of the men on the whole has been good, there has been an increase in the number of these cases of pathological excitement and nervous breakdown occurring in soldiers in whose vicinity a shell has exploded. No bodily injury is necessary to bring about these nervous disturbances; terror, often also the psychical shock of seeing dead comrades, is quite sufficient as a causal agent, though the effects produced depend largely on the disposition and temperament of the individual.

There is no evidence in those of Gaupp's writings that I have seen of any attempt to discover the real causes of the disorders with which he deals. He recognises, however, that incorrect treatment often intensifies and maintains this diseased state. Observations made during the treatment of these cases showed that the acute symptoms were generally soon got rid of and the conditions quickly improved. In the less serious cases (headache, &c.) no objective signs of ill-health could be discerned, and the patients, when not professionally observed, appeared bright and fit for anything.

Most significant and important, however, was the observation that, even in some milder cases, any attempt to send the soldier back to the front or the bare mention of this possibility produced a return of the nervous trouble and occasionally of maniacal excitement. In other cases, also, where nervous troubles, uncontrollable in nature and intensity, led to the patient being kept in hospital for many months, it was found that the mental foundation which was a causal factor of these troubles was a more or less conscious anxiety concerning the possibility of a return to the front. "There is no justification[1] for calling every instance of this a case of malingering or simulation. There are men quite capable and morally unassailable whose nervous system is positively unfitted for the hardships and horrors of war. They have enthusiasm and the best of intentions, but this mental inspiration does not continue when the horrors and terrors come. Their inner strength rapidly decreases, and it only requires an acute storm to break on the nervous system (such as bomb explosion or the death of comrades) for their self-control to vanish completely; and automatically their condition changes into what is popularly called hysteria. Feeling within itself that it is no longer master of the situation the exhausted mind 'takes refuge in disease.' At first, as a rule, obvious signs of terror and anxiety manifest themselves (tremor, twitching, &c.); if these are cured there still remain chronic symptoms of hypochondria and despondency. Time, however, has its effect in many of these cases, and the longer the patient is away from the overstrain and terrors of war the more these troubles fade. Only too often, however, an effective residuum remains, due to anxiety about the renewed dangers and horrors of war, and reference to his recall to service may revive the trouble—the recollection of the sight of his dead comrades may suffice to bring on tremor of the whole body." (Gaupp cites the case of an officer.)

(That it would be untrue and unjust to attribute all such manifestations to fear is shown by the fact that a man of unquestioned courage and determination, and apparently devoid of fear, proved and tested in previous wars, may exhibit such symptoms.

A case in point is that of a British soldier, described to me by the medical officer who treated him. The man had suffered from severe shock symptoms and had recovered. In conversation with the medical officer the soldier expressed his willingness and even his anxiety to return to the front, in full knowledge of the fact that the officer's report in that sense would lead to his being sent back to fight. That night the patient was awakened by a terrifying dream, the true significance of which was certainly not adequately appreciated by him. Although he dreamt that he was afraid to go back to the front, apparently he did not realise that he was actually afraid—i.e., that the dream had any meaning. On examination it proved to be a detailed forecast of the imaginary incidents of his return to his regiment and of his attempt to drown himself when ordered to go to France. Here was a man who of his own initiative had asked his doctor to certify him as ready to return; yet in his sleep the train of thought started by the discussion of the possibility

[1] From this point to the end of the section I have included between inverted commas a very free translation—in some cases merely a summary—of Gaupp's remarks concerning the problem of the psychoneuroses as it exists in the German army. My own remarks appear in brackets.

of his return, working subconsciously, had stirred up images of what his return implied, and reinstated emotions of so terrifying a nature that in his dream he preferred suicide rather than face the ordeal again.

Although at the outset of the treatment Gaupp's chief aim, both from patriotic and from scientific considerations, was to bring about the soldier's speedy return to the field, he soon lost confidence in his capacity to do this; and partly from discretion, partly from insight into the nature and causation of these disorders, he changed his views. From discretion, because he considers that hysterical and psychopathic persons are usually inferior soldiers; and he regards it to be the most important duty of the neurologist and psychiatrist to defend his country from the possibility of an accumulation of mental invalids and life-long war-pensioners. Experience teaches that the acute symptoms of war-hysteria are usually curable, and they disappear more easily when anxiety concerning a return to the fighting is removed. These people are quite healthy from the social point of view, and quite capable of earning their own living if one discharges them in this state, so that they may take up their civil trade, or recommends them for a military duty which keeps them away from the front. On the other hand, he finds that traumatic hysteria is not readily cured during war. It tends to persist until the conclusion of peace. But then another difficulty arises in the shape of war-pensions. So long as the war lasts the patient is glad to escape the renewed danger and work again in civil life, for which he is usually capable; but at the end of the war, when work will be difficult to find and a pension lies dazzlingly before him, the impulse to work may fail. Thus, both in order to spare the country great expense, and, by means of work, to free the hysterical permanently from war-hysteria, discharge is often found to be the right measure. Not merely discretion, however, but a full understanding of the nature of hysterical symptoms, led Gaupp to a more cautious attitude; the recognition of the fact already mentioned that in the fight with hysteria the neurologist is in most cases hampered by the fact that the war is still going on. What is the use of patching up a hysterical mind at the back of which fear of the war still slumbers, when the least shock from outside—and in the army there are plenty of these—is sufficient to upset everything again? Often enough the apparently cured person, soon after his return, again breaks down,[2] whereas, even in the most serious cases of hysteria, cure often follows quickly and completely as soon as the patient is certain that he need not return to the front. One is therefore led towards the conclusion that despite the danger which undoubtedly exists of the ominous suggestive effect of such discharges, on the production of complete and semi-simulation all around—a danger which can be averted only by a thorough knowledge of psycho-neuroses and hysteria on the part of the physician—there is nothing else for it but to discharge the men. The situation produced is disconcerting, and any remedy for the puzzling situation, says Gaupp, will be welcome.) "Obviously every method must be used which has been found to be of service in the cure of psychogenic states; and we must not underrate the appeal to patriotism, to the needs of military duty, and the call of comrades."

"But frequently all these influences fail: anxiety, care, and distaste are stronger. The symptoms remain and they become intensified as soon as the words 'fit for duty' are heard. The actual resumption of duty only makes matters worse, because under the stress of war we cannot always expect that those in military command will handle the intensely disturbed soldier with insight and understanding, and with the patience of the expert psychiatrist."

"The secret of handling convalescent psychopathic, and above all hysterical, patients lies in recognising that they must be allowed to work in the right place and in the right way. The military scheme, with its distinction of fitness for field or garrison service and unfitness for duty, does not meet the requirements. Not everybody who cannot be put into the firing line need remain on garrison duty at home, nor is everybody who is qualified for garrison service suited for the fatiguing field training in garrison which is the preliminary stage of field service. Moreover, sentry duty is not always suitable. Unoccupied loafing in barracks is tiresome, even for the sick men themselves. So it often happens that these people are discharged without it being absolutely necessary. In the case of the older men the military organisation is very careful to put their knowledge, powers, and capacity to the most useful service. In the case of the younger troops this happens less often than in the case of those who are relatively fit for service; but a similar procedure is to be strongly recommended in their case also. Many of them—for example, Government servants, such as teachers and clergy, whom the State can spare only with reluctance—might be restored to their positions. They would be much more useful there than in unprofitable oscillation between the front, the convalescent home, and the hospital. Farmers who are not suitable for the front, and are also difficult to utilise in garrison work, because their hysterical symptoms forbid it, can be sent to work at home in the spring and summer, their agricultural knowledge being more valuable to the State than their doubtful military qualities. The case of young shop assistants and workmen, concerning whom there is a question of discharge on account of hysterical symptoms, is different. If their work is in munition factories or serves military purposes in some other way, we need not be much concerned about their discharge to return to such work (naturally under control). If this is not the case, the danger lies in the consideration that after their discharge they will merely increase the number of people without work, so that it is much better to get them a suitable post in military service."

"In this country where the normal activities of the nation are being maintained as well as war work, this consideration hardly applies. The only man who has the necessary information to form an adequate idea of a mental patient's fitness is the medical officer who has studied the individual patient and knows his real condition. No other medical officer or medical board can say whether or not he is fit for work. This officer should be invested with full authority not to send straight back to the front the nervous and hysterical soldier—in whose case a long hospital treatment, for the reasons mentioned above, is of no further use—but to decide how the man should be employed. One must not, however, fall into the error of giving all these semi-useful people clerical or office work to do. In forming a decision as to what each person can do, one must bear in mind his civil occupation, the circumstances of his family, his own feelings and ideas, and his capabilities. If this is done in the right way, hundreds or thousands of nervous hospital inmates whose condition shows no sign of improvement can be employed in ordinary ways."

"A kind of military register for these half-capable nervous men should be compiled. (What is true of these nervous men will be equally so of others—not nervous cases—who are only half capable, so that the question will not be one of small numbers.) Information would be given as to what kind of work can be supplied; and the allotment of nervous patients according to the advice of the medical specialists could then be taken in hand. After a few initial difficulties the organisation should work quite smoothly; in this way work would be obtained from the men so mobilised, the hunt for pensions would be discouraged, and the spur would be applied to the simulator and the exaggerator. Presumably also many healthy people who are fit for field service and garrison duty would be set free, because their present work at home or at the depôts would be taken over by these half-capable people. We should at least try with all the means in our power to keep the men who have once been enlisted for our country's service, so long as serious disease does not make their discharge legally unavoidable. The longer the war lasts the more the number of nervous and hysterical patients will increase; the greater will be the necessity, instead of keeping them as costly inmates of a hospital, of putting their energy to some use in the appropriate part of the military organism."

I shall now turn to the consideration of certain other factors to which many physicians attach great importance in the etiology and treatment of these incipient cases of mental disturbance.

Heredity.

The claim has been made by certain workers that the soldiers who become affected by shock are weaklings or are descended from mentally afflicted or nervous parents. It is,

[2] Dr. Forsyth has explained this danger most forcibly and lucidly in THE LANCET of Dec. 25th, 1915, p. 1403: "It will be admitted that a railway passenger who has suffered a nervous shock in a collision will be little able to undertake railway travelling for some time afterwards; *mutatis mutandis*, this applies to a nerve-shaken soldier, and his return to ordinary duties. But to send the soldier back to the firing line is equivalent to putting the passenger into an express train which, he knows beforehand, is to be wrecked on the journey."

of course, unquestionable that in a large army there must be many soldiers with tainted family histories; and it is probably equally certain that such factors play some part in determining the greater susceptibility of certain men to shock. But it would be a gross misrepresentation of the facts of the case to label all the soldiers who suffer from mental troubles as weaklings. The strongest man when exposed to sufficiently intense and frequent stimuli may become subject to mental derangement. It is quite common to find among the patients suffering from shock senior non-commissioned officers who have been in the army for 15 or 20 years (much of which time has been spent in foreign service under trying circumstances, such, for example, as the South African War), and have stood this severe strain. Such men can hardly be called weaklings.

Even those cases where there is a definite history of a neurotic parent, it would be a mistake hastily to conclude that when the son of such a man or woman becomes a victim of battle-shock it is due to heredity. For when the detailed history of such patients is obtained the fact comes out quite clearly that the social disturbances in the household of such a nervous person may be amply sufficient to inflict severe psychical injuries upon young children.

Further, in many cases the histories themselves clearly and definitely reveal the real etiology of the mental condition, and point to emotional disturbances in children, due to the cruelty of drunken parents, a rankling sense of injustice, a terrifying experience, which might have been an accident or deliberate maltreatment by some human being, or again, to the appalling conditions created in some of these soldiers' homes by nervous and irritable parents, as the real trauma which the "shock" has served to reawaken.

Treatment.

Amongst those whom experience has convinced of the efficacy of psychological treatment for this class of case there are indications of a divergence of opinion in the matter of treatment. One school believes that it is sufficient if the medical man has discovered the real cause of the trouble and explained it to the patient. The other school looks upon the preliminary psychical examination merely as a means of diagnosis, the unveiling of the hidden cause of the trouble; and considers that the treatment should be the laborious and often lengthy process of re-educating the patient, and so restoring to him the proper control of himself. It is of the utmost importance to emphasise the undoubted fact that those who maintain either of these views to the exclusion of the other are committing a grievous and dangerous error, for there is no real line of demarcation between the two schools.

A sensible and intelligent man, once the cause of the trouble has been made clear to him, may be competent to continue to cure himself, or, in other words, to re-educate himself, and completely to get rid of the cause of his undoing. But the duller and stupider man may need a daily demonstration and renewal of confidence before he begins to make any progress. It is precisely analogous to the experience of every teacher of a class of students; the brilliant man will seize hold of a principle at once and learn to apply it without further help, whereas the dull man needs repeated and concrete demonstrations before it sinks into his understanding.

In dealing with soldiers, and this applies with especial force to the regular army, the aspect of many of the cases differs considerably from those of the civilians. Trifling forgetfulness in the civilian would perhaps not be a serious cause of worry, but in the soldier, inured by years of training to strict discipline, forgetfulness even of trivial instructions, or any difficulty in understanding complex orders, is likely to bring down upon his head condign punishment. Such lapses are regarded by the soldier as extremely serious offences, because years of training and discipline have inculcated this idea. When as the result of shock such soldiers are afflicted by even slight forgetfulness, they become worried by it much more than the civilian and exaggerate its importance until it becomes a real terror to them. As the result of their training they regard such phenomena as altogether abnormal; and by a process of rationalising what to them is a novel experience, they are apt to imagine that they are going mad. Such patients often dream about incidents in their army life when they had been forgetful and got into trouble; they become possessed with the haunting fear that they are now likely to get into perpetual difficulties, and are worried by the thought that they are incompetent for the duties to which they have been accustomed, and imagine themselves debarred from all useful work. However, they are easily reassured when the medical attendant explains to them that in ordinary life civilians are frequently subject to such experiences, and that it is only the special circumstances of army life which make such trivial lapses seem serious to them. Not only is the soldier much more scared by such things than the civilian, but it is also a very remarkable phenomenon, and certainly one which came as a surprise, that the neurasthenia of the soldier is apt to be very much more serious than that of the civilian; for when a really brave man is stricken by fear he is more seriously affected by the terror of an experience which not only has a larger element of novelty than in the case of the civilian, but also wounds him more deeply by convincing him that he is lacking in that very quality which is most essential for his professional work.

The Question of Isolation.

There is a considerable divergence of opinion as to whether or not it is proper to treat such patients as exhibit hysterical symptoms by isolation. There can be no doubt that a certain proportion of them, when isolated, make a complete recovery, and that when used with discrimination such a procedure is a very useful therapeutic agent; but it is equally certain that in other cases, and especially in those cases where the whole of the symptoms are determined or influenced by the revival of some painful experience of the past, isolation may not only be ineffective, but even positively injurious. For, by removing the patient from all distracting influences, you throw him upon his own resources, and practically force him to brood over those very memories which are at the root of all his trouble.

It cannot be too strongly emphasised in connexion with this subject that most of the theory[3] and practice of treating hysteria by isolation has been developed in civil practice, and often has been illustrated from cases of well-to-do women living in the lap of luxury. The circumstances of the soldier are entirely different. First, as regards the removal of the patient from the surroundings which caused the breakdown, a thing which has already been done when he was brought back from the trenches into hospital, the isolation of the hysterical soldier can hardly be justified on that score. At the same time, the removal to a military hospital at any rate should obviate all danger of his being pestered by foolish relatives and friends with their mistaken sympathy or excessive attention. And as regards the importance of discipline and routine, the soldier is in a very different position to that of the wealthy society lady, for he has already been subject to such training.

In some instances, however, just as in the civil cases, isolation may have the important effect, by the boredom it induces, of making the patient want to recover and try to recover. But there is the corresponding disadvantage that if you isolate a man and put a special nurse to look after him it is impossible to convince him that his case is not serious. It may, indeed, help him to persuade himself that he is really going insane. As a matter of experience, it is found that very many men cannot stand isolation for long; they feel that they must break out, even if they realise that punishment is certain for doing so. In conversation with patients who are undergoing treatment by isolation they are often perfectly frank about it, and tell the medical officer they will break out at the first opportunity; that the few hours of freedom would more than compensate for the punishment which would come afterwards. Such men, therefore, become a positive nuisance in general hospitals, and whenever possible they should be put into a special hospital.

Without denying, however, that treatment by isolation is effective in a good many cases, there are adequate reasons for regarding it as much less generally appropriate in the case of soldiers than it is in the majority of patients dealt with in civil practice. But it must be apparent that, when the present trouble is due in any considerable measure to the reawakening of emotions linked up with some painful experience in earlier life, isolation is not likely to be effective in many cases, and may be definitely harmful.

[3] The theory of treatment by isolation has been lucidly explained by Mohr in Lewandowsky's Handbuch der Neurologie.

Hypnotic Suggestion.

The question of the possible usefulness of hypnotism in dealing with these cases of shock has been discussed in an interesting way in Colonel Myers's articles in THE LANCET of Jan. 8th, p. 65, and March 18th, 1916, p. 608.

I suppose most physicians who have had any experience of hypnotic suggestion will agree in the main with the mature opinions expressed by Déjerine and Gauckler (pp. 278–283). In patients whose illness is of long duration it is not only inadvisable, on ethical grounds, to resort to hypnotism, but also for the strictly therapeutical reasons that it is not likely really to help in curing the patient, and may even aggravate his illness. "All psychotherapy should first and foremost be addressed to the functions of consciousness, and a method such as hypnotic suggestion which is addressed to the functions of automatism can no longer be practised at the present time" (Déjerine and Gauckler, p. 281). Even suggestion in the waking state, "though in all respects less dangerous than hypnotic suggestion," is subject to the grave objection that in using this method the physician's attention is necessarily directed "to the symptom, and completely neglects the underlying mental [cause]." "By direct suggestion one weakens instead of strengthening the patient's critical power. It does not in any way accustom him to judge his impressions and to recognise the value of his sensations. Here again the attempt to remove the symptoms, or to cure by outside suggestion, only tends to reinforce the patient's auto- and hetero-suggestibility, which form the very source of his symptoms." [4] These opinions concern those cases in which neurasthenic or hysterical symptoms have become definitely established. The problem of dealing with the acute symptoms of shell-shock, such as Colonel Myers has discussed, and perhaps of certain cases of persistent amnesia, does not necessarily fall within the same category.

In the great majority of cases of some considerable duration, and in practically all of those in which the trouble is due to some ante-war worry or emotion, it may be regarded as probable that hypnosis is of no use and in many cases may be positively harmful, for under such circumstances, even with the most favourable conditions, it would result merely in the removing of symptoms; and the removal of one may be followed by the appearance of another, which may even be induced by the process of hypnosis. Moreover, in cases where there is a tendency to the development of a double personality hypnosis may have the effect of emphasising the risk. Further, if the patient has sufficient of his own will-power to enable the process of re-education to be carried out, it is clearly undesirable, both on psychical and ethical grounds, for the doctor to impress his influence from without.

In considering the possibility of the usefulness of hypnotic suggestion it is important to bear in mind that various factors may come into play in impressing an event upon the patient's memory, or in determining the effect of the shock from which the patient is suffering when he arrives in hospital. In the first place there is the vividness or intensity of the stimulus; in the second place, the degree of recency; in the third the frequency of the stimulus; and in the fourth relevancy. By the latter is understood the extent to which a given event appeals to the individual's past experience, and becomes integrated into his own personality.

A patient who has recently received a severe shock, the effects of which alone represent the real trouble, without the disturbance of any antecedent experience, might quite well be relieved by hypnotic suggestion of sleeplessness, pain, or amnesia; and in some cases this removal of the acute symptoms which determine the persistence of the shock effects may lead to complete recovery. A single and sudden wholly irrelevant experience, such as the bursting of a shell, which has no relationship whatever to the patient's past experience, and produces effects by its vividness and its recency, might quite well be neutralised by another kind of wholly irrelevant intrusion, such as hypnotic suggestion. This argument might perhaps be made more intelligible by a homely analogy. A temperate man walking along the street might be thrown temporarily into a condition of faintness or collapse by seeing some ghastly accident, but by taking a "brandy and soda," which to such a man would be a wholly irrelevant experience, the physiological expressions of his emotions might be controlled and he might be able to proceed on his way, and to overcome completely the effects of the transitory experience. But in the case of a man who, for example, had been greatly worried by monetary troubles for a number of years, the "brandy and soda" would not produce anything more than a temporary alleviation of his troubles. The latter illustration represents the chronic psychosis which, as Déjerine has so admirably explained, is quite unsuitable for hypnotic treatment. But the distinguished French neurologist's statements do not seem to apply to the former type of case, due to a vivid recent shock, in the symptomatology of which troubles before the shock play no part. In such cases the results of hypnotic suggestion are often brilliant, if erratic, as is the "brandy and soda cure" for the man who is overcome by a sudden terrible experience in the street.

There are, however, patients who have not sufficient will-power or intelligence to be properly re-educated, in whom, perhaps, a certain amount of suggestion may be of some use, but this class of case is somewhat dubious. I might refer to a case which illustrates the dangers of hypnosis as well as its possible usefulness. It is that of a man all of whose companions were destroyed by the bursting of a shell, and who suffered for months afterwards from complete loss of memory. A medical man hypnotised him, and perhaps with undue tactlessness, brought back the memory of the critical incident at the front, stripped of all the episodes which led up to or followed it. It excited in him the most violent emotions, and he became sick with terror; for the revived incident seemed perfectly real to him, or, as he described it afterwards, "it jumped up against him," and for weeks he was so utterly terrified that he would not go near the doctor. Even though he could not retain the memory of any other recent events the horror of that experience seemed to have made him remember his dread of a particular medical man. But by making use of the information gained during that revival under hypnosis of an incident unknown to anyone but the patient, which his amnesia up till then had kept sealed up, it became possible for another medical officer to bridge the gap between his memory of previous events and the experiences which the patient was known to have had in the military hospitals.

In speaking of the results of hypnotic treatment as being brilliant but erratic, it is important to remember that the same observations apply to suggestion without hypnosis. For instance, the application of electricity to the vocal cords in cases of hysterical aphonia affords an admirable illustration of the treatment by suggestion, even if the method savours of charlatanism. An excellent demonstration of the part which psychical factors play in such cases is afforded by the story of the sailor on the German battle-cruiser *Derfflinger*, recorded by Blässig.[5]

A seaman from the *Derfflinger* was brought into a naval hospital with loss of voice on Dec. 22nd, 1914, and could speak only in a whisper. He said that he had always had good health, with the exception that as a child he had diphtheria, but recovered without tracheotomy or any complication. His voice had always been clear and well under control. At the beginning of December he had a slight cold, which he attributed to sentry duty on deck in very stormy and wet weather. Suddenly he lost his voice, two days after the shelling of Scarborough (Dec. 16th), while he was in the munition chamber of the big guns, and was greatly upset during the firing. After 14 days he recovered his speech. On Feb. 12th, 1915, he returned to hospital with complete loss of voice, immediately after the naval engagement in the North Sea. On Feb. 15th he was treated with electricity, directly applied to the vocal cords, and on March 20th he was discharged with complete recovery of his speech. But on returning to duty, as soon as he went on board his ship his voice was suddenly lost for the third time, and he remained aphonic.

This is clear evidence of the fact that his trauma was psychical. His previous history perhaps contains the clue explaining why, in his case, it was his voice which was affected. The application of the faradic current was suggestion pure and simple.

In emphasising the uselessness or even danger of suggestive therapeutics in most cases that are not quite recent, I have not been referring to that method of suggestion which is involved to greater or less degree in all successful treatment of disease—the process of gaining the patient's confidence and impressing him with the idea that he is going to recover.

[4] Déjerine and Gauckler, p. 232.

[5] Münch. Med. Wochensch., June 15th, 1915, p. 335.

"The conversational attitude, the familar manner of talking things over, the heart-to-heart discussion, where the physician must exert his good sense and feeling, and the patient be willing to be confidential. [This is the method which Déjerine calls "psychotherapy by *persuasion*."] It consists in explaining to the patient the true reasons for his condition, and [for] the different functional manifestations which he presents. It consists, on the other hand, moreover, and you may say almost wholly, in establishing the patient's confidence in himself and awakening the different elements of his personality, capable of becoming the starting-point of the effort which will enable him to regain his self-control. The exact comprehension of phenomena which he presents must be grasped by the patient by means of his own reasoning. ..... The part that the physician plays is to recall, awaken, and direct. He has nothing to do with suggestions."[6]

No one who has not had the experience of guiding mental patients in the way so lucidly expounded by the French physicians can form any adequate conception of the remarkable efficacy of these common-sense methods in restoring to those who are afflicted a normal attitude of mind. It is certainly saving considerable numbers of soldiers from the fate of insanity. These methods are not novel, even if the fuller comprehension of their mode of operation is only dawning upon us now. This point has been admirably expounded by Déjerine and Gauckler, from whose book I must quote once more:—

"May we be permitted to quote a few lines in which Bernardin de St. Pierre has defined, more exactly and better perhaps than we could do, and with a sort of prescience of what is needed, the very rôle that we would like to [see our physicians adopt towards their patients].

I wish that there might be formed in large cities an establishment, somewhat resembling those which charitable physicians and wise jurists have formed in Paris, to remedy the evils both of the body and of one's fortunes; I mean councils for consolation, where an unfortunate, sure of his secret being kept and even of his incognito, might bring up the subject of his troubles. We have, it is true, confessors and preachers to whom the sublime function of offering consolation to the unfortunate seems to be reserved. But the confessors are not always at the disposition of their penitents. As for the preachers, their sermons serve more as nourishment for souls than as a remedy, for they do not preach against boredom, or unhappiness, or scruples or melancholy, or vexation, or even so many other evils which affect the soul. It is not easy to find in a timid and depressed personality the exact point about which he is grieving, and to pour balm into his wounds with the hand of the Samaritan. It is an art known only to sensitive and sympathetic souls.

Oh! if only men who knew the science of grief could give unfortunate people the benefit of their experience and sympathy, many a miserable soul would come to seek from them the consolation which they cannot get from preachers or all the books of philosophy in the world. Often, to comfort the troubles of men, all that is necessary is to find out from what they are suffering."[7]

Déjerine and Gauckler add:—

"One could not express any better, or any more directly, what we never cease to maintain, however lacking in science it may seem at the first—namely, the real therapeutic action of kindness.

Liberated morally, and having regained consciousness of self, and freed in addition from his functional manifestations by the appropriate processes ....., the patient is cured. He is cured from his actual attack. But his mental foundation, his psychological constitution, still remains in the same condition which permitted him under emotional influences to become a neurasthenic. The rôle of the physician is, therefore, not ended. He must still build up his patient's life, still practise prophylaxis, and get the patient into a condition where his character will be established."[8]

General Considerations.

As recently as Jan. 15th, 1916, the *British Medical Journal* was responsible for the statement: "The only hope that our present knowledge of insanity permits us to entertain of appreciably diminishing the number of 'first attacks' lies in diminishing habitual and long enduring drunkenness and in diminishing the incidence of syphilis" (p. 105). This statement would have been sufficiently amazing if it had been made two years ago; but when the hospitals of Europe contain thousands of "first attacks" of insanity, which are definitely *not* due either to alcohol or syphilis, the only conclusion to be drawn from it is that its author must have been asleep since July, 1914, or have become so obsessed by his fixed idea as not to be able to see the plain lessons of the war.

Syphilis, no doubt, is responsible for a very considerable proportion of cases of insanity, and drink *perhaps* for some more; but the incipient forms of mental disturbance which the anxieties and worries of warfare are causing ought to impress upon the attention even of the least intelligent members of the community that such causes are operating both in war and peace, and are responsible for a very large proportion of the cases of insanity. But what is still more important, it is precisely these cases which, if diagnosed in the early stages and treated properly, can be cured. The chief hope of reducing the number of patients in asylums for the insane lies in the recognition of this fact, and acting upon it in the way of providing institutions where such incipient cases of mental disturbance can be treated rationally, and so saved from the fate of being sent into an asylum.

Such measures have been adopted upon an extensive scale in Europe[9] and America, and have met with marked success. In this country our distinctive national obstinacy and the devotion to such catch phrases as "the liberty of the subject"—even when this involves the incarceration of the patient whose liberty to escape treatment and to become insane is the issue so jealously defended—have hitherto proved insuperable obstacles in the way of this tremendous reform. The present war, which has been responsible for destroying so many illusions, has worked many wonders in the domain of medicine. It has forced the authorities to inaugurate the rational and humane treatment of early cases of mental disturbance, which treatment in times of peace they persistently refused even to consider. But if the lessons of the war are to be truly beneficial much more extensive application must be made of these methods,[10] not only for our soldiers now, but also for our civilian population for all time.

[6] Déjerine and Gauckler, op. cit., p. 283.
[7] Bernardin de St. Pierre, Etude de la Nature, 1784.
[8] Op. cit., pp. 302 and 303.

[9] Major Rows tells us that in the province of Hesse, "by reason of suitable treatment during the early stages of mental illness (the authorities) had been able to postpone for some years the erection of a new asylum in the province." (Jour. Ment. Sci., vol. lviii., 1912, p. 35.)

[10] In an address on the Absence of Proper Facilities for the Treatment of Mental Disorders in their Early Stages (Brit. Med. Jour., Jan. 8th, 1916, p. 41), Dr. Bedford Pierce has recently emphasised the urgency of this reform.

THE PREPARATION AND USE OF CERTAIN AGGLUTINATING SERA.

BY HARRIETTE CHICK, D.Sc.

(With a Note on PREPARATION OF AGGLUTINATING SERUM FOR B. DYSENTERIÆ SHIGA, by E. JEAN DALYELL, M.B.)

(*From the Lister Institute of Preventive Medicine.*)

THE large incidence of intestinal infections among our forces in the Eastern Mediterranean during the summer and autumn of 1915 has led to a continually increasing demand for specific agglutinating sera for purposes of diagnosis. This in itself is proof that the method has proved a trustworthy routine measure for establishing the identity of the organisms isolated from these cases. In these circumstances an adequate supply of specific, high-titre sera is essential, and without making any claim to originality, it may be of use to give a short description of the method employed in this Institute for their preparation, and a few hints as to their use in practice.

Preparation.—After trial of both horses and goats, rabbits have been adopted almost exclusively for the manufacture of these sera. It has been found that they yield the most satisfactory serum, although the quantities obtained are small.

Immunisation is obtained by intravenous injection into the ear-veins of overnight cultures on nutrient agar, washed off with 0·85 per cent. salt solution. In some cases living cultures were alone used during the immunisation; in others these were only employed after a preliminary injection of vaccines heated for about 30 minutes to 56–57° C.; in others again, heated vaccines were used throughout the immunisation. At first a direct count was always made of the number of organisms injected, but after some experience it is possible to gauge the numbers of organisms required for the larger doses as fractions of an agar "slope."

The rabbits selected should be at least 2000 gm. in weight. Each animal under treatment is weighed daily and charts

are kept of its daily weights; these give a useful indication of the general condition. A graduated system of dosage is employed, and the doses succeed each other as rapidly as is permitted by the condition of the animal, the intervals varying from four or five days to seven days or longer if the weight and general health of the rabbit be not sufficiently restored. In this way, with a little experience, the animals can be maintained in good health during immunisation, and it is unusual to lose any during the process. Immediately after an injection the animal needs special care and attention, and extra protection from cold should be provided. A temporary change of diet from cabbage leaves and bran to milk and bread and oats is frequently a great help. Animals which are being immunised with members of the dysentery group show the greatest disturbance after an injection and require the most care.

About seven days (or longer, according to experience) after the final injection a few drops of blood are taken from the rabbit's ear-vein and the serum tested as regards its agglutinating titre for the homologous organism. If the test gives a satisfactory result the animal is bled out immediately, if possible. Urethane (about 5 to 8 c.c. of a 30 per cent. solution) is injected subcutaneously about half an hour previously, and ether is employed at the time of the operation. The animal is bled from the carotid artery under aseptic conditions and the blood is collected in a sterile tube and allowed to clot; the sterile serum is drawn off, usually after standing for two days, and carbolic acid added as a preservative, to a concentration of 0·5 per cent. The yield of serum from a rabbit of 2000 gm. weight is on an average about 40 c.c.

The serum obtained from each rabbit is separately examined, both as regards its agglutinating power for the homologous organism and for the presence of group-agglutinins. The agglutinating serum distributed consists of the pooled sera of several rabbits, each of which has passed satisfactory tests. The mixed batches are re-tested against several cultures of the specific organism and thoroughly examined for group-agglutination, the cultures tested, including, if possible, some recently isolated strains. If time permits, each batch is kept in stock for some months before being issued in order to watch for deterioration.

A number of interesting results have been acquired during the immunisation of large numbers of rabbits. This most interesting fact has been disclosed—viz., that sera of a definite agglutinating titre for the homologous organism may be obtained with some regularity, if immunisation is carried out on standard lines, carefully controlled. This suggests that idiosyncrasy of the rabbit plays a less important part in the process than had been supposed. The individuality of the animal, on the other hand, has a considerable effect on the specificity of the serum, especially in immunisation with members of the dysentery group.

The table below gives details of the procedure found useful in preparing the various sera required; notes are added dealing with the main points of interest special to each group. The figures given in each case express the average titre with the homologous organism and the average degree of specificity which may be expected. These data merely express the average of the results collected up to the present time, and are not to be regarded as final.

Method of testing.—The method adopted for carrying out agglutination tests and determining the titre of sera is one capable of easy reproduction in active service conditions.

The macroscopic method is employed exclusively, and the tubes containing bacterial emulsion and diluted serum are placed in an ordinary incubator at 37° C. The time allowed is two hours in case of the sera of the typhoid group and of cholera, and four hours in case of M. melitensis and the dysentery group. With some dysentery "Shiga" sera the agglutination after four hours cannot be seen with the naked eye, but is distinctly visible with a lens of 10 diameters magnification; in these cases the agglutination titre is marked "microscopic." The agglutination tubes are left at room temperature for about 15 to 30 minutes before being read; they are then left overnight in the laboratory and examined next morning for confirmation. The titres given refer to the appearances at the end of the two or four hours' incubation.

The bacterial emulsions are made from overnight growths on ordinary nutrient agar slopes, washed off with sterile distilled water. This first emulsion is diluted until it contains 2000-3000 million organisms per c.c., a strength which, after preliminary experiments, was found to give a convenient opacity and was adopted as standard. In practice it is attained by diluting the original emulsion until print 2 mm. in width can be clearly read through a narrow test-tube (10–12 mm. diameter) filled with the emulsion. This opacity is, roughly, that obtained when milk is diluted 200 times with water.

As a general rule, fresh living emulsions are used in the test, seeing that the sera are destined for diagnosis of fresh living cultures in practice. Occasionally, however, among members of the typhoid-paratyphoid group it has been found suitable to employ formalised emulsions (containing 0·1 per cent. formalin) in obtaining the titre of the homologous serum.

The serum to be tested is diluted with physiological salt solution (0·85 per cent. NaCl) to a series of strengths ranging from 1 in 62·5 to 1 in 8000 or over. A set of small agglutination tubes is arranged, containing 0·5 c.c. of each of these dilutions and 0·5 c.c. of the emulsion to be tested, so that the final concentration of serum varies from 1 in 125 to 1 in 16,000 or more. The concentration of salt in the final mixtures is 0·42 per cent.; this is found better than full physiological strength in case of organisms (for example, B. paratyphosus B) which have a tendency to self-agglutination, and for this reason the bacterial emulsions are made with distilled water. The macroscopic titre, published with the sera distributed, indicates the highest dilution of the serum giving an agglutination which is readily seen with the naked eye under the stated conditions of the test.

Specificity of sera.—Agglutinating sera prepared with members of the typhoid-paratyphoid group usually show a definite co-agglutination for certain members of the same group, but remain specific as regards the dysentery group. In the same way, the agglutinating sera of the various dysentery types show group-agglutination among each other, but not with members of the typhoid-paratyphoid group. The degree of specificity that is usual with the various sera is shown in the table. In some cases the sera obtained have to be discarded altogether, owing to the presence of group agglutinins which might cause confusion in practice. Even so, it is not always possible to obtain absolute specificity, especially where high-titre sera are desired. It seems as if in the production of a high titre (e.g., 8000–32,000) for the homologous organism, definite group agglutination for members of the same group is also evoked. In general, the degree to which this occurs varies with individual rabbits, and in some cases with the strain employed for immunisation. Numerous examples are to be found below in the table. An experienced worker will often detect group-agglutination by its incompleteness and the slowness with which it takes place. Moreover, error is avoidable if for diagnostic purposes the sera are employed in an appropriately high dilution, and this procedure has the additional advantage of economy. It is now the custom in this Institute to indicate, with all sera issued, what dilution is recommended for diagnosis.

If it is the practice in any pathological laboratory to make up a certain fixed dilution of agglutinating sera for routine diagnosis, this dilution should in each case have reference to the titre of the sample of serum used, and while low enough to include the less agglutinable strains of the homologous organisms should be sufficiently high to avoid the confusion of group-agglutination. In any case, it is not advisable to rely upon the agglutination test as a sole means of diagnosis, but the organisms isolated should always, where possible, be submitted to cultural tests in addition.

In this Institute, at the present time, agglutinating sera are tested for specificity against fresh living emulsions of other members of the intestinal groups of organisms. In the past formalised emulsions were sometimes used. It has been shown,[1] however, that the presence of formalin in emulsions inhibits group-agglutination; in these circumstances it has seemed advisable to make all specificity tests with fresh emulsions, so that the tests may be as rigorous as possible.

Typhoid-paratyphoid group: B. typhosus, B. paratyphosus A, B. paratyphosus B, B. enteritidis Gärtner.—Agglutinating sera for the members of this group are prepared without difficulty and a high titre is readily obtained. B. paratyphosus B is the most toxic for rabbits and, in immunising, it is necessary to start with small doses and to proceed with some caution. Still, if the animals are treated with care there is no difficulty in bringing them to the end of the immunisation in good health. With B. typhosus, B. paratyphosus A, and B. enteritidis Gärtner there is usually little difficulty or danger.

The character of the agglutination is also very satisfactory; it takes place rapidly and the aggregated bacteria give a coarse and flocculent deposit. This is in marked

[1] See Dreyer, Proceedings of the Royal Society of Medicine, Medical Section, vol. ix., 1915, p. 11.

Table giving Preparation and Properties of Agglutinating Sera of the Different Pathogenic Intestinal Organisms.

Note.—(The doses are arranged for rabbits of approximately 2000 gm. weight.) The numbers expressing titre refer to the highest dilution in which macroscopic agglutination is clearly visible to the naked eye under the conditions of the test.
The specificity tests in every case were made with the serum obtained at the final bleeding.

Organism.	Day.	Dose.	Treatment of vaccine.	Titre with homologous organism.	Specificity.		Method of test.
					Organism.	Titre.	
B. typhosus. Strain: "Simpson."	1	1000 millions (1/20–1/30 slope).	Heated ½ hour at 57° C.		B. parat. B.	About = 500	Macroscopic, 2 hours, 37° C.
	6	2000 millions (1/10 slope).	Not heated.		B. ent. Gärtner.	,, = 1000	
	13	If titre is high, bleed if not, give 10,000 millions (1/2 slope).	,,	8000 (probably)	B. parat. A.	Less than 125	
					B. dys. Y.	,, ,, 125	
					B. ,, Shiga.	,, ,, 125	
					V. choleræ.	,, ,, 125	
	20	Bleed.	,,	8000–16,000			
B. typhosus. Strain: "Chapman."	Immunisation as above.			4000–8000	B. parat. B.	Less than 250	Macroscopic, 2 hours, 37° C.
					B. ent. Gärtner.	,, ,, 250	
					B. parat. A.	,, ,, 125	
*B. typhosus. Strain: "Guy."	Immunisation as above.			4000–8000	B. parat. B.	About = 1000	Macroscopic, 2 hours, 37° C.
					B. ent. Gärtner.	Less than 250	
					B. parat. A.	,, ,, 125	
*B. typhosus. Strain: "Horam."	Immunisation as above.			32,000	B. parat. A.	Less than 125	Macroscopic, 2 hours, 37° C.
					B. ,, B.	,, ,, 1000	
					B. ent. Gärtner.	2000–4000	
B. paratyphosus B. Strains: "Schottmüller-Bainbridge," "McWeeney," or "McNee 9."	1	150 millions.	Heated ½ hour at 57° C.		B. typhosus.	Less than 250	Macroscopic, 2 hours, 37° C.
	6	300–400 ,,	,,		B. parat. A.	,, ,, 500	
	12	1200 ,,	,,		B. ent. Gärtner.	,, ,, 250	
	19	If titre is high, bleed; if not, give 5000 millions (about 1/6 slope).	,,	8000 (probably)	B. dys. Y.	,, ,, 125	
					B. ,, Shiga.	,, ,, 125	
					V. choleræ.	,, ,, 125	
	26, 27	Bleed.	,,	8000–16,000			
B. paratyphosus A. Strains: "Schottmüller, original," "Oxford," or "Haddon."	1	100 millions.	Not heated.		B. typhosus.	Less than 500	Macroscopic, 2 hours, 37° C.
	6	400 ,,	,,		B. parat. B.	,, ,, 500	
	11	1200 ,,	,,		B. ent. Gärtner.	,, ,, 500	
	16	4000 millions (about 1/5–1/6 slope).	,,		B. dys. Y.	,, ,, 125	
					B. ,, Shiga.	,, ,, 125	
	23, 24	Bleed.	,,	8000–16,000	V. choleræ.	,, ,, 125	
B. enteritidis Gärtner. Strain: "D. H. Bainbridge."	Immunisation as above for B. paratyphosus A.			16,000–32,000	B. typhosus.	Less than 50	Macroscopic, 2 hours, 37° C.
					B. parat. A.	,, ,, 500	
					B. ,, B.	About = 1000	
					B. dys. Y.	Less than 125	
					B. ,, Shiga.	,, ,, 125	
					V. choleræ.	,, ,, 125	
B. dysenteriæ Flexner. Strain: "Bistree."	1	3000–5000 millions (about 1/10 slope).	Heated ½ hour at 57° C.		B. typhosus.	Less than 125	Macroscopic, 4 hours, 37° C.
	6–9 (according to condition of animal).	6000–10,000 millions (about 1/4 slope).	,,		B. parat. A.	,, ,, 125	
					B. ,, B.	,, ,, 125	
					B. ent. Gärtner.	,, ,, 125	
					B. dys. Y.	= 1000–2000	
					B. ,, Shiga.	Less than 250	
	15–18	Bleed.		4000 (rarely 8000)			
B. dysenteriæ Y. Strain: "Hiss and Russell."	As above for B. dys. Flexner; in some cases unheated vaccines were used throughout with good results.			2000–4000 (rarely 8000)	B. typhosus	Less than 125	Macroscopic, 4 hours, 37° C.
					B. parat. A.	,, ,, 125	
					B. ,, B.	,, ,, 125	
					B. ent. Gärtner.	,, ,, 125	
					B. dys. Flexner.	= 2000–4000	
					B. ,, Shiga.	Less than 500	
V. choleræ.	1	1000 millions.	Heated ½ hour at 57° C.		B. typhosus.	Less than 125	Macroscopic, 2 hours, 37° C.
	6	3000 ,,	,,		B. parat. A.	,, ,, 125	
	11	10,000 millions (about 1/10 slope).	,,		B. ,, B.	,, ,, 125	
					B. ent. Gärtner.	,, ,, 125	
	16	20,000 millions (about 1/5 slope).	,,		B. dys. Y.	,, ,, 125	
					B. ,, Shiga.	,, ,, 125	
	23	If titre is high, bleed; if not, give 50,000 millions (1/2 slope).	,,	4000–8000			
	31, 32	Bleed.	,,	4000–8000			
M. melitensis. Strain: "Bassett-Smith."	1	2000 millions.	Heated ½ hour at 57° C.		M. para melitensis.	500	Macroscopic, 4 hours, 37° C.
	8	4000 ,,	,,				
	16	Bleed.		6000			
M. paramelitensis. Strain: "Br."	1	2000 millions.	Heated ½ hour at 57° C.		M. melitensis.	Less than 125	Macroscopic, 4 hours, 37° C.
	8	4000 ,,	,,				
	15	10,000 ,,	,,				
	23	Bleed.		1000			

* Considered unsuitable for distribution.

contrast to the reaction in the dysentery group, where the agglutination is fine and granular and takes place much more slowly.

The great drawback is the presence of co-agglutination with other members of the group. It may be noted that these cross agglutinations do not always involve members which are most closely related culturally. The most striking group-agglutination encountered is that of typhoid sera for B. enteritidis Gärtner.[1] This property, which varies with individual rabbits, seems also to depend upon the strain of B. typhosus used for immunisation. A considerable amount of high titre typhoid serum has been rejected on this account and search is being made with some success for a strain of B. typhosus which will produce a serum more specific in this respect.

B. paratyphosus B sera do not commonly agglutinate B. enteriditis Gärtner to any extent, as might have been expected, but Gärtner sera have been found to agglutinate emulsions of B. paratyphosus B.

The agglutinating sera of this group are very stable. They have been found to retain their titre at full strength during the time they have been under observation. In some cases these periods have extended to 12 months and the serum has remained stable, whether in the pure or diluted condition and whether kept in the laboratory or under conditions of uniform low temperature.

Dysentery group: B. dysenteriæ "Y" and "Flexner."—A marked group-agglutination for B. dysenteriæ Shiga is usually present in "Y" sera; on one occasion a titre of 2000 was noticed when the titre for the homologous organism was only 8000. In this respect great variation has been noticed in different individual rabbits. The limit of agglutination titre for B. dysenteriæ Shiga permitted in "Y" serum has been about 500, and the sera of rabbits immunised with "Y" have occasionally to be discarded owing to this limit being exceeded. Sera prepared with B. dysenteriæ "Y" (original strain of Hiss and Russell) usually agglutinate strains of "Flexner" to a degree commensurate with the homologous strain, but sera prepared with "Flexner" have been found much more specific (see the table above). The strains of "Flexner" and "Y" have been stock strains in the Lister Institute for some years; the "Y" has acquired the property of fermenting maltose, and both cultures now ferment saccharose slowly. In this latter property they show a leaning towards the type B. dysenteriæ "Strong." The relation between these three types of dysentery is at present somewhat uncertain. The "Strong" type possesses the greatest fermentative activity, but individuals of the "Flexner" and "Y" type show an inclination to acquire some of the properties considered typical of "Strong," such as fermentation of sorbite, saccharose, &c. As regards serological characteristics, the relation between dysentery "Y" and dysentery "Flexner" must be regarded as a very close one, and, when the similarity in cultural characters is also taken into account, it would seem unnecessary at this stage to attempt any systematic separation of these two types.

It has not been possible to prepare sera with the "Strong" type of dysentery as an authentic culture, showing typical culture reactions, could not be obtained.

B. dysenteriæ "Shiga." The preparation of agglutinating serum for B. dysenteriæ "Shiga" presents considerable difficulty, and the methods used in this Institute have not yielded the consistent results obtained with other organisms. Further experiments are now in progress, and it is hoped that a satisfactory method for obtaining uniform results will shortly be evolved. Up to the present time preliminary doses of about 50 million organisms, followed nine or ten days later by 100 millions, both vaccines killed by heat, have been injected subcutaneously. This has been followed by intravenous doses, gradually increasing in amount until about 8000-10,000 millions, or more, living bacilli could be given. The first subcutaneous doses are the most dangerous, and it has been unusual to bring more than 20 per cent. of all rabbits employed safely through the immunisation process, and there is no certainty that in the serum of the survivors a high agglutination titre will develop. Moreover, after removal from the rabbit, the serum frequently deteriorates rapidly during the two or three months following. Owing to these facts, the available supply of "Shiga" agglutinating serum has remained very limited in amount and the supply issued has, in the main, depended on a few chance successes among a large number of rabbits used.

The serum produced by immunising rabbits with B. dysenteriæ "Shiga" varies considerably with regard to specificity. As has been stated above, the serum never causes any significant agglutination with members of the typhoid-paratyphoid group, but "Shiga" serum of a titre equal to about 2000-4000 commonly gives reaction with dysentery "Flexner" or "Y" in dilutions up to 1 in 250. About 50 per cent. of all the serum obtained has exceeded this limit and has been rejected; the sera selected for distribution have usually been of low titre (1000-2000), but definitely specific for B. dysenteriæ "Shiga."

In case of dysentery sera, deterioration has frequently been noticed on keeping, more noticeably in case of "Shiga" serum. Experiments are in progress to ascertain whether this may not be due to the presence of the 0·5 per cent. phenol as preservative. Methods of drying these sera are also under investigation. These appear to be promising and it is hoped that dry preparations may prove stable and especially suitable for tropical climates.

V. choleræ.—In the case of cholera, certain cultures produce sera which are limited in agglutination for other strains of cholera. The practice in this Institute has been, therefore, to immunise several rabbits with single strains, afterwards pooling the sera. The following strains (for two of which I am indebted to the kindness of Dr. Freeman) were selected with a view to including as wide a variety as possible: (1) "27," received from Russia, November, 1909; (2) "Singapore," from Straits Settlements; (3) "Freeman, 31," Russia, isolated in the autumn of 1914; (4) "Kucera," Hungarian epidemic, 1913; (5) "Liston," isolated in Bombay, March, 1915.

Cholera-agglutinating sera have proved very stable.

M. melitensis.—It has been found difficult to obtain high-titre agglutinating serum with M. paramelitensis (see also Bassett-Smith, *Journal of the Royal Army Medical Corps*, 1915, vol. xxiv., p. 431), nor does there appear to be any advantage in prolonging the immunisation beyond the three doses given in the table. The sera obtained always failed to agglutinate emulsions of M. melitensis at a dilution of 1 in 125, but the corresponding M. melitensis sera, of considerably higher titre, frequently agglutinated M. paramelitensis at about 1 in 500. The vaccines used in immunisation were made from 48 hours' cultures on glucose agar.

NOTE ON PREPARATION OF AGGLUTINATING SERUM FOR B. DYSENTERIÆ SHIGA.

BY E. J. DALYELL, M.B.

April 4th, 1916.

Since the preceding notes were written a satisfactory method for the preparation of agglutinating serum for B. dysenteriæ Shiga has been established. Preliminary work showed that repeated subcutaneous doses of vaccine produced only a low agglutinating titre for B. dysenteriæ Shiga in the serum of rabbits, and that a single intravenous dose was much more effective. Further, initial subcutaneous doses of 50 million bacteria caused a mortality of 50 per cent., which was not appreciably diminished by washing or sensitising the organisms. When intravenous doses were used, 20 million bacteria could be injected with comparatively little risk to the animal, and the immunisation could be completed in about one month by a series of graded intravenous doses at intervals of about seven days. It was found dangerous to employ a larger first dose than 20 million organisms, and this strength was estimated by careful counting. There is no evidence that toxicity is lessened by heating the emulsion, and all doses after the first were unheated.

Various strains of B. dysenteriæ Shiga showed considerable differences as regards toxicity and immunising power. A recently isolated strain (Wynne) of low toxicity was finally selected, and proved very effective as an immunising agent.

After each dose the animal loses weight and generally refuses food; in severe cases paralysis of the limbs and diarrhœa are observed. The animal is kept warm and fed with milk, administered with a tube if necessary, and often recovers completely in three to four days. The daily weight chart usually shows that it is safe to give the next dose

[1] This phenomenon is interesting in connexion with an observation which has been made repeatedly (most recently by Dawson, Brit. Med. Jour., July 24th, 1915) that the sera of patients suffering from typhoid fever agglutinate B. enteritidis Gärtner.

seven days after the preceding one. After four or five doses the maximum titre is reached, and for B. dysenteriæ Shiga this appears to be about 2000 in rabbit serum; a higher titre (of 4000) is rarely observed, and in some instances it is impossible to induce better titre than 1000. When a good titre of 2000 is produced in the serum it is generally useless to try and improve this by additional vaccination, and the rabbit should be bled out. Several rabbits kept under observation for two or three months and repeatedly inoculated with B. dysenteriæ Shiga have gradually lost their agglutinating power for this organism, and it has been impossible to restore it.

Specificity.—The method of rapid immunisation by intravenous doses produces a more specific agglutinating serum than the previous, more gradual, method with preliminary subcutaneous injections. The production of co-agglutinins for B. dysenteriæ Flexner and B. dysenteriæ Y was not found to depend on the strain of Shiga used for immunisation, but varied with individual rabbits, and it is at present unexplained. In a few cases no co-agglutinins were

Organism.	Day.	Dose.	Treatment of vaccine.	Titre with homologous organism.	Specificity. Organism	Specificity. Titre.	Method of test.
B. dysenteriæ Shiga. Strain (Wynne).	1	Millions 20	Heated or unheated.	Less than 62·5	—	—	Macroscopic, 4 hours, at 37°
—	6	—	—	1/250	—	—	Macroscopic, 4 hours, at 37°
—	8	100	Unheated	—	—	—	—
—	14	—	—	500 to 1000	—	—	Macroscopic, 4 hours, at 37°
—	15	500 to 1000*	Unheated	—	—	—	—
—	21	—	—	1000 to 2000	—	—	Macroscopic, 4 hours, at 37°
—	22	2000 to 5000*	Unheated	—	—	—	—
—	29	—	—	2000 to 4000	B. dysent. Flexner.	Less than 250	Macroscopic, 4 hours, at 37°
		—	—	—	B. dysent. Y.	Less than 125	—
—	30	Bleed out.	—	—	—	—	—

* According to condition.

detected, but in the majority of cases a titre of 250 for B. dysenteriæ Flexner and 125 for B. dysenteriæ Y was developed. In a certain number of rabbits, after prolonged dosage with B. dysenteriæ Shiga, the titre for B. dysenteriæ Flexner and B. dysenteriæ Y reached 500 or 1000; such sera were rejected.

The normal serum of rabbits often shows some degree of agglutination for B. dysenteriæ Flexner or B. dysenteriæ Y, and it is advisable that examination of serum should be made before commencing immunisation with B. dysenteriæ Shiga in order to reject all animals that possess agglutinating properties for the mannite-fermenting dysentery organisms.

QUEEN'S HOSPITAL FOR CHILDREN, HACKNEY-ROAD, N.E.—The annual concert given by the Queen's Hospital Aid Society in support of the funds of this institution was held on April 13th at Shoreditch Town Hall. The concert was very successful, and there was a large attendance. The songs rendered by, amongst others, Miss Edith Evans, Miss Marion Beeley, Mr. John Booth, and Mr. Norman Allin were much appreciated. The funds of the institution have benefited in previous years through these concerts to the extent of £4955. The Queen's Hospital for Children has done, and does, excellent work in the battle with disease and physical defect amongst our young population. For many years it has made organised efforts, in coöperation with schools for mothers and similar institutions, to reduce the infant mortality of the surrounding districts; and owing to the provision necessarily made in London for military cases, it is now called upon to deal with a larger number of children than ever before. The Lord Mayor has come forward to help the hospital by holding a Mansion House meeting in support of an appeal for £5000. The meeting will take place at the Mansion House on Thursday, May 11th, at 3.30 P.M.

INTRAMINE: A NEW ANTISYPHILITIC REMEDY.

BY HAROLD SPENCE, B.A., M.D., C.M.,
RESIDENT SURGICAL OFFICER, LONDON MALE LOCK HOSPITAL.

SOME months ago Mr. J. E. R. McDonagh handed me samples of several synthetic preparations of sulphur which he had prepared, with instructions to employ them in the treatment of cases of syphilis with a view to determining their value. It was soon apparent that di-ortho-amino-thio-benzene, otherwise known as "intramine," was the most valuable of these, and I desire in this paper to report some clinical results following its use in a series of 65 cases of syphilis.

Origin of intramine.—In THE LANCET of Jan. 29th Mr. McDonagh alludes to researches in which he has been for some time engaged, designed to explain the action of arsenical compounds in syphilis and to clear up as well the empiricism of the Wassermann reaction; in the course of which investigations the possibility of new antisyphilitic remedies was suggested. Pending a full report of this work shortly to be made by him, I shall endeavour to give a brief and non-technical summary of his views as there expressed. He regards the action of salvarsan and similar drugs as organotropic rather than parasitotropic, as stated by Ehrlich. The latter believed that the arsenic became attached to, what he termed, chemoceptors in the protoplasm of the parasites, thus in suitable dosage effecting their destruction without injury to the host. It was found in practice, however, that relapses even after repeated injections of salvarsan and the occurrence of nervous complications were by no means infrequent, except perhaps in the earliest cases, and conservative treatment required the exhibition of mercury as well, for a longer or shorter period. This failure of salvarsan to cure has been variously explained. By some authorities it has been ascribed to the escape of certain spirochætæ, which have in some manner become inaccessible to the remedy; whilst by others it is believed that the spirochæta pallida is merely a phase of the organism responsible for syphilis. Whatever the correct explanation may be, the one fact upon which there is general agreement is that salvarsan does not always eradicate syphilis.

Chemistry of intramine.—Mr. McDonagh discards the theory of chemoceptors and considers the rôle of arsenic as essentially that of a catalyst, its action being greatly to increase the protective powers of the host. These last are described as of a chemico-physical nature and to consist in a process of adsorption between the lipoid-globulin molecules of the serum and plasma cells and those of the parasites, involving the destruction of the latter. For this consummation the presence of active oxygen is necessary, and this is supplied in the body chiefly through the action of a peroxidase upon a peroxide. The action of arsenic in a preparation of the salvarsan type is that of a peroxidase, with the result that the natural defences of the body for the time are fortified or magnified greatly. That its action is not parasitotropic is further indicated by the fact that experiments with other metals, notably with preparations of aluminium and iron, reveal that even more powerful drugs of this character can be prepared, these possessing the added advantage of being non-toxic.

As syphilis becomes more chronic, the ability of the host to form active oxygen directly is lessened, and in consequence he is obliged to form most of it indirectly, through the action of a perhydridase, or in other words, by means of reduction. It was found that while certain metals, of suitable valency and atomic weight, acted as peroxidases, the perhydridases were non-metallic, and it was sought to produce a drug which would have the same activity in late cases of syphilis as is possessed by aluminium, iron, and arsenic in the earlier ones. Many compounds of readily adsorbed non-metals were synthesised, of which the most successful in practice, as already indicated, was intramine, sulphur appearing to be the catalyst. After having been absorbed the sulphur appears to act as a disulphide, the action of the disulphide being to produce active hydrogen and the peroxide required to furnish active oxygen.

Properties and administration. — Di-ortho-amino-thiobenzene is a mustard-yellow crystalline substance, soluble in alcohol, ether, and acetone, but insoluble in water. For intramuscular administration, the only manner in which it is

at present employed, it is suspended in oil in the proportion of 1 gramme in 10 cubic centimetres. This readily passes through an ordinary intramuscular needle and is administered precisely as grey oil is given, the needle-hole being preferably sealed with collodion to prevent leakage and the possible supervention of a slight dermatitis. Up to 12 grammes have been given, but full therapeutic effect is obtained with 1 or 2 grammes, repeated in a few days if required. Local pain after administration is a variable symptom, some patients complaining of severe and persistent pain, while others, and particularly those accustomed to intramuscular injections of mercury, may experience nothing more than slight stiffness. There seems no objection, however, to the addition of a local anæsthetic, particularly with female or nervous patients, and I prefer quinine and urea hydrochlorid, the anæsthesia from which lasts several days. Injections are best made at the point midway between the anterior superior spine of the ilium and the upper end of the natal cleft, the needle being directed forward, inward and slightly upwards. From 24 to 48 hours after injection a rise of temperature and some malaise may be looked for, but rarely does the thermometer reading pass 103° F. The induration at the site of injection disappears in a few days and with ordinary aseptic care there should be no sloughing, and in my own cases there has been none.

Reports of Cases Treated.

It has been said that the metals are indicated in the treatment of early manifestations of syphilis, the field of the non-metallic remedy being the later stages of the disease where metallic compounds alone are less useful. Here 1 gramme of intramine should be injected intramuscularly, followed on the third or fourth day, when any immediate reaction will have subsided, by a metallic preparation intravenously. My experience has been, however, that not infrequently the lesion has disappeared so rapidly that it was healed or nearly so before the arsenical or other preparation could be given. Most of the later cases summarised below will be seen to be of this category. In primary syphilis I have found intramine little effective. Given after a metallic preparation it may occasionally accelerate the disappearance of a secondary papular rash and the induration of a large sore of the Hunterian type. It seems also to influence favourably superadded ulcerative conditions.

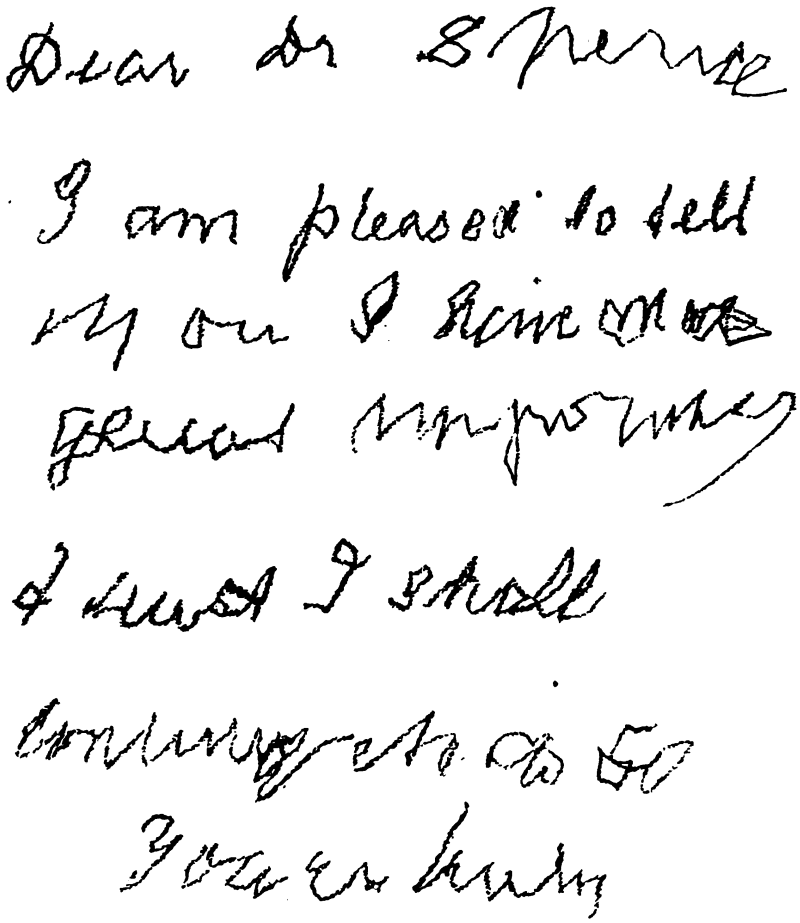
CASES 1, 2, and 3.—Three patients with primary sore treated only with intramine, a clean dressing being applied locally. One developed secondaries while under treatment, and none was benefited appreciably in two weeks.

CASE 4.—A sailor aged 31. This was one of the first patients treated with intramine. When admitted he had a profuse small-pattern maculo-papular rash, a sore on the penis with secondary mixed infection, and oral lesions. Intramine 0·45 grm. was given every fifth day for five doses. The infection about the sore was at once favourably influenced without other treatment, but while the papules on the trunk retrogressed steadily the improvement in this respect was not remarkable. Papules on the buttocks and thighs and upon the flexor surfaces of the forearms were more resistant and were present at the end of four weeks.

CASE 5.—A man aged 27. This patient had a large tense indurative œdema of the penis, concealed sore, and a maculo-papular rash of ten days' duration. Intramine 4 grm. was given, but no improvement appearing within a week other treatment was instituted.

CASE 6.—A man aged 25. A case of secondary syphilis and gonorrhœa, the first acquired three months previously, the other three weeks. He had also had adenitis of the right groin, where upon admission to the wards was an irregular sluggish ulcer of the size of a half-crown. The latter had been treated with local applications and ionisation without result. First he was given galyl, 35 cgrm., intravenously, and two days later 2 grm. of intramine, a sterile dressing being applied to the exulcerated area. One week later the ulcer was cleaner and smaller. The galyl was repeated twice at weekly intervals and the intramine at the end of a month after admission, the ulcer being then nearly healed. Three days later it had entirely closed.

When we pass, however, the early secondary stage intramine is capable of producing results which are often surprising and which, after a considerable experience in the use of arsenical preparations, I am sure they will not generally produce. I refer particularly to recurrent lesions, early and late, gummatous conditions, interstitial fibrotic conditions, and such troublesome complications as painful fissuring of the tongue, these constituting over two-thirds of the cases I have treated with intramine, either alone or in combination with galyl.



Facsimile of letter written by paretic patient, described as Case 13.

CASE 7.—A man aged 70. This patient I exhibited among others at a recent meeting of the Dermatological Section of the Royal Society of Medicine. He contracted syphilis in 1866 and had complained of a bad tongue for 25 years. He first came to the hospital 18 months ago, when he had two intravenous injections of "606," which caused little or no improvement in the tongue condition. The salvarsan was followed by three courses of mercurial injections and iodides, which likewise produced no improvement. On Nov. 6th, 1915, the patient was given 1 grm. of intramine. At this time he exhibited an ulcer, the size of a sixpence, on the dorsum of the tongue, with two fissures running laterally from it. Posterior to the ulcer was a wart about the size of a small cherry. The movements of the tongue were restricted and the patient suffered considerable pain and discomfort. On the third day after the intramine the tongue began to improve, and when he was seen again in a fortnight the ulcer had closed, the fissures had disappeared, and the wart was considerably smaller. Two months later the tongue was soft and perfectly mobile, the wart nearly disappeared, and the patient suffered no pain or discomfort—as the patient said: "The tongue has never been so well for years."

CASE 8.—A man aged 27. Contracted syphilis about May 1st, 1915, chancre appearing three weeks later, for which a chemist prescribed a lotion and a few pills. When first seen, Oct. 23rd, there was an erosion at the site of a healed sore, a faint disappearing rash, half a dozen radiating painful fissures of the dorsum of the tongue, tonsillar ulceration, and a dull red scaly inflammation of the chin. I injected 2 grm. of intramine, and in three days the chin was paler and less scaly. The tongue, the most troublesome lesion, and that which prompted him to seek advice, was improved, and upon his next visit, four days later, the fissures had closed. There was some improvement in the condition of the tonsils and pharynx, but the addition of local measures was required to clear up these symptoms fully.

CASE 9.—A sailor aged 32. He had contracted syphilis four years previously, and secondaries being slight had received no treatment whatever. When first seen there was a scooped-out tertiary ulceration of the glans penis 1·7 cm. in diameter and 0·5 cm. in greatest depth. One injection of intramine, 1·5 grm., was given, with the result that almost immediately the process was arrested and within a week there remained only a healed depression.

CASE 10.—A man aged 28. This patient contracted syphilis early in May, 1915, and attended the hospital for the first time on June 12th, when intramuscular injections of mercury were commenced. After the fifth weekly injection he discontinued treatment, the sore having then closed and a slight roseola being also gone. Four months later he returned, exhibiting a superficial recurrent syphilitic ulceration of the under surface of the skin of the penis, 6 cm. in length and 0·3 to 0·5 cm. in width, and some sluggish inflammation of the skin of the scrotum adjacent. Three grammes of intramine were given. Forty-eight hours later the ulceration had healed, one of the most remarkable results that I have ever seen. In the intervening day the patient seems to have had a fairly marked febrile reaction.

CASE 11.—A man aged 45. Acquired syphilis 13 years ago, following which he appears to have had very inadequate treatment with mercury spread over five years. Upon examination I found an irregular gummatous lesion of the under surface of the penis, somewhat less than a shilling in size, with a moist and sloughing crater-like base, the ulceration in its progress having opened the lower wall of the urethra at the meatus. Three grammes of intramine were given, and upon his next visit to the hospital a fortnight later the lesion was healed and its area shallower and smaller.

CASE 12.—A man aged 21. When first he attended the out-patient department a healed sore was found, a disappearing rash, and painful fissuring of the tongue, with mucous membrane lesions. Six full doses of galyl were given at weekly intervals and all symptoms disappeared with the exception of the tongue affection, which failed also to respond to routine treatment and local applications. One gramme of intramine was finally administered, and in two weeks the fissures had closed.

Syphilis of the nervous system.—Quite recently I have been prompted to test the efficacy of intramine in the treatment of syphilis of the nervous system, my cases thus far being limited to two of tabes dorsalis, one of Erb's syphilitic spastic paraplegia, and one of general paralysis of the insane. Regarding the first three, I have no objective improvement to report. One of the ataxic patients states that he can now "feel the ground," and is much encouraged in consequence. The progress of the patient with general paralysis of the insane has been sufficiently interesting to merit a detailed reference.

CASE 13.—A man aged 39. First symptoms were noticed in December, 1914, when he became irritable and uncertain in temper, this being quite unlike his previous invariable good nature. Thenceforward his wife, the informant, observed a progressive change in his disposition: he was always tired and found increasing difficulty in concentrating his attention upon any task; his handwriting became shaky and his gait uncertain, his condition at the end of six months being such that he was obliged to relinquish his work. He was then referred to a psychiatrist, who diagnosed general paralysis of the insane, a diagnosis subsequently confirmed by a second consultant. After a slight transient improvement, on or about August 10th, 1915, there occurred a paralysis of the right upper extremity, and interference with speech, which had now become definitely tremulous and hesitating. He became steadily worse as the weeks passed, displayed marked defects of attention, interest was retarded, and he was frequently confused. Upon admission to the hospital, on Jan. 14th, 1916, he presented a typical picture of paresis of the depressed type. He was disoriented and retarded, any replies finally secured being hesitating, tremulous, and incoherent. He was poorly nourished, filthy, and indecent in habits, occasionally resistive, and required every nursing care. Deep reflexes were minus, pupils unequal and only very sluggishly responsive to light. On the day following admission he had a slight general convulsion. Three grammes of intramine were given, repeated in one week. Two days following the second injection there was a recognisable and rather sudden improvement; he answered more readily and more accurately, and was cleaner in habits. Three days thereafter he was able to be up in a chair and partially dressed for two hours, was correct in habits and conduct, recognised the call to stool, and returned coherent answers to questions with little retardation. On the following day, however, he relapsed, and was mildly disturbed throughout the night. Again he received intramine, 3 grm. (Jan. 30th), followed in five days by galyl, 40 cgrm. Two days subsequently he was better than at any time, conversing pleasantly with his wife and the attendants, and evincing a good realisation of his circumstances. The intramine was repeated on Feb. 10th, 1 grm., and the galyl three days later. The letter reproduced (see figure) he wrote and composed himself, at my request, on Feb. 14th, or one month after admission: his first attempt to write in some months. At this time he was sitting up several hours daily, walked with the assistance of his nurse to the toilet rooms, and took a few steps without help, although unsteadily.

In non-syphilitic cases.—Intramine has been given in a few cases of lupus vulgaris, where it has been useful in rapidly clearing-up ulcerated areas, due to caustic treatment or otherwise. I have seen one case of lupus exuberans in the service of Dr. H. G. Adamson at St. Bartholomew's Hospital, where not only was the ulcerated part quickly healed but the whole lesion became paler in colour. It seems also to be of some value in the treatment of chronic infective or degenerative processes, non-syphilitic in character, such as troublesome leg ulcers. Further investigation will define its full usefulness, and its limitations.

Summary and Conclusions.

The arsenic in salvarsan and similar remedies is not parasitotropic, but acts as a catalyst, multiplying the protective power of the host. This is of a chemico-physical nature, and consists in a process of adsorption between the lipoid-globulin molecules of the serum and plasma cells and those of the parasites. For its consummation the presence of active oxygen is necessary; supplied in the body chiefly through the action of a peroxidase upon a peroxide. Arsenic as a more powerful peroxidase greatly increases the natural defence. Aluminium and iron are even more potent, and are non-toxic. After a time the ability of the host to produce active oxygen directly is lessened; hence it must be produced indirectly, by means of reduction, through the action of a perhydridase. The peroxidases are metallic, the perhydridases non-metallic; and in later stages of syphilis sulphur acts in a manner analogous to the action of aluminium, iron, and arsenic in early syphilis. Di-ortho-amino-thio-benzene is an efficient symptomatic remedy, particularly in later secondary syphilis and its complications and in recurrent and tertiary lesions. It appears also of value in cerebro-spinal syphilis. It has proved effective in some chronic processes non-syphilitic in character—e.g., lupus vulgaris and chronic leg ulcers.

RESULTS OF TREATMENT OF CHRONIC JOINT DISEASES BY CERTAIN PHYSICAL MEASURES.

BY JOHN J. GRACE, F.R.C.S. ENG.,

CHIEF ASSISTANT IN THE X RAY DEPARTMENT, ST. BARTHOLOMEW'S HOSPITAL.

WITHIN the last two years or so I have treated 24 cases of chronic joint disease by radiant heat and static electricity, with in a few cases electrothermic penetration (diathermy) also. Among these were 2 ankle-joints, 11 knees, 7 hips, 1 phalangeal joints of hand, 1 elbow, and 2 shoulders. The ankles did fairly well, knees very well, hips uniformly badly, elbow- and finger-joints badly, and shoulders fairly well.

1. One ankle was a case of Pott's fracture two years earlier in a lady aged 65. There was outward displacement and pain on walking. Bony thickening about fibula and some thickening of soft parts around tendo Achillis. The patient said she was very much better, and insisted on having as many as 35 treatments, as she was sure the improvement was continuous. That was two years or more ago. She now writes that she "can walk quite long distances, but standing soon becomes very painful." She adds that it is really not much better.

2. The other ankle was rheumatoid arthritis of the joint in a case of myxœdema. The joint condition had lasted six years, and now at 37 patient was completely disabled. There was general puffy swelling of the joint, great pain, but no

grating on movement. She had about 50 treatments, at the end of which the joint still looked very bad, largely because of general anasarca of the limbs, as having returned to work she was on her feet a good deal. She said the pain and use of the limb were much better. She has kept her position as a cook for nine months since treatment ceased.

The larger number of knees treated enables a better judgment to be formed of results to be expected in these cases. Six cases I regard as either rheumatoid or osteo-arthritis, some certainly, others probably. To take the two worst first:—

1. A soldier had had some loose bodies and synovial fringes removed from both knee-joints, and the diagnosis of rheumatoid (*sic*) arthritis was then definitely made. When he came under my care the wasting of his thigh muscles was extreme and his mental condition one of despair. There was grating on movement and various knobby points could be felt around the joints. He attended almost daily for about three months and then rejoined his regiment after passing a medical board. Afterwards he wrote that he was playing tennis and polo three times a week, and he is now with his regiment in France.

2. The next case is equally instructive. The patient was 52 when I first saw her two years or more ago. Sixteen years ago injured left knee; had had pain under knee-cap off and on since. Two years ago right knee similarly affected. Left very bad last three months; right getting steadily worse. Grating in both joints for two or three years. Both knees showed lipping of patellar articular surfaces. In addition, the left knee showed enormous thickening of synovial membrane. The patient has had a great deal of treatment from time to time. As a result, the synovial thickening and pain are gone. She has walked as much as 15 miles without pain, and without examination no one would think there is anything the matter with her knees at all. The lipping remains. Quite a bad relapse last autumn yielded quickly to treatment.

3. This case is, I think, one of rheumatoid arthritis. Patient, aged 46, had stiffness for 18 months first in her left knee, then in right. Began acutely with some pain and rise of temperature; stiffness followed. Pain like neuralgia on sitting for a while, and then again on rising. Creaking of joints. She had ten treatments without result and gave it up. She was one of my first patients, and if she came to me now I should urge a longer trial, though most people who are going to reap benefit do so before ten treatments. I am indebted to Dr. T. J. Horder for permission to publish the notes of this case.

4. Patient, aged 66, complained of aching pain down legs at night and knees getting stiff; a little grating on movement. Evidence of rheumatoid arthritis in fingers and some stiffness in shoulders formerly. She had ten treatments in 1912. I saw her a few days ago. She says she has had no return whatever of trouble in her knees.

5. Patient, aged 40, was kept awake at night in February, 1914, by pain in her left knee. It improved and got bad again in April. Since then until July, 1914, when I saw her, had been getting about, sometimes with a crutch, sometimes without; limping badly; pain very slight now. There was swelling of joint, partly due to fluid, but chiefly to synovial thickening. Considerable wasting of thigh muscles; much grating. After ten treatments patient refused to continue as she said she was quite well. She was certainly much better, and three months later the knee appeared normal except for the grating. I am indebted to Dr. Hugh Roger-Smith for permission to publish the notes of this case.

6. Corporal ——, R.F.A., sent to hospital as a case of chronic synovitis. Extra strain of mobilisation, he says, caused the knee to swell. Very bad at first, better now, but weak and painful on walking. Had been under treatment for two months by rest in bed with limb in a splint, and then by pressure. There was fluid in the joint and synovial thickening. This patient immediately improved and was encouraged to use his knee instead of sparing it, but he always relapsed just as I hoped he was well. After 20 treatments, I sent him to the dental department where five molars were extracted. After that he rapidly got quite well, but I have no confidence in the permanence of his recovery, as all his molars are bad and should be extracted.

7. Miss —— had given her knee a kind of twist in May, 1913, and again in June, 1913. It swelled up and became painful on walking; rest in bed relieved it. In September it got bad again. There was slight swelling due to fluid in the joint and slight tenderness to pressure at inner aspect of head of tibia with perhaps a little bone thickening there. It got well in six treatments and has remained well to date.

Three of the above 7 cases had pyorrhœa when they came under treatment; two others had had it. Two had no pyorrhœa and no history of it. The other knee cases are a little difficult to classify:—

One gave a history of injury at polo. The knee swelled up from time to time and was then painful. Then the other knee appeared to get weak at tennis. A few treatments to both knees, perhaps 12 in all, seemed to put them quite right.

Another patient had frequent attacks of acute synovitis in the right knee. Ordinarily there is a good deal of creaking in both joints. When seen he had much fluid in the right joint. It got well in three days.

Yet another had twisted his knee two years before I saw him. It was now, as he described it, unreliable, weak at cricket and annoying in that way. It never gave way suddenly. He was quite unimproved by my treatment, but six months after, when on a hunting expedition, he wrenched his knee badly. It swelled up, got very hot and inflamed, and has given no trouble since. A bonesetter could have made much capital out of this knee.

I welcome a bad knee, but do not feel enthusiastic when a patient tells me he has rheumatism in the thigh or hip, which too often means, in my experience, advanced osteo-arthritis of the hip-joint. Sometimes, too, cases of osteo-arthritis say they are suffering from sciatica. I have treated seven cases; no successes. Four of them were shown by skiagrams to be advanced cases of osteoarthritis with numerous osteophytes around the joint. The other three were not X rayed, but two had stiff hip-joints and the third much muscular wasting and an outwardly rotated thigh. Of the seven, four said they derived some benefit, but it was not obvious to me. It is possible, however, that the treatment strengthens the muscles to some extent.

Note.—Since writing the above I have treated two further cases. A skiagram in one showed marked changes in the joint, and, as I expected, there was no improvement. The other showed no joint changes in the skiagram, but there were marked stiffening and restricted movement in both hip-joints, particularly the right. This joint was treated by diathermy followed by the static wave-current, and after a month of daily treatment there was notable improvement in the lameness and in the movements at the joint.

Of osteoarthritis in the fingers I have treated one case only. There was no improvement. Of elbow cases one was treated. I cannot be sure what this was. It was characterised by great tenderness over the olecranon. I could not detect any of the usual evidences of osteoarthritis. It did not improve. Two shoulder cases were treated.

1. Male, age 51. Has had glycosuria 15 years. Evidence of osteoarthritis not very marked, a little grating, some wasting of deltoid, and pain in the shoulder on movement. Some limitation of movement. After six weeks' treatment he was very much better, had less pain and more use in the arm.

2. Male, age 40. Has had pain in right shoulder-joint for 25 years. He could play tennis in summer of 1913; now arm is completely useless. X rays showed partial ankylosis. There was great wasting of all shoulder muscles. After 21 treatments patient was very much improved in every way; could use his arm more and had much less pain. In addition to treatment from me, he had treatment by injections of rheumatic phylacogens to which he reacted very severely once. It is now about five months since treatment ceased. He writes that there is little or no pain in the shoulder, in which, however, I should imagine that ankylosis is complete. The use of the arm is much improved. I am indebted to Dr. Byres Moir for permission to use the notes of this case.

In comparing these results the contrast between knee- and hip-joints is striking. The other joints have been too few to form any judgment. The first cause to consider is the great difference in the joints in (1) character of articulation; (2) blood-supply; and (3) depth from surface.

Character of articulation.—Owing to the form of the hip-joint articulation and the mutual adaptation of the bones entering into the joint structure, an inflammation not giving rise to much pain will not early impress the patient as of great importance. Increasing stiffness will be put down to muscular rheumatism, and not until the disease is far advanced either in the way of calcification or of distortion will he realise that something serious is the matter. On the other hand, the integrity of the knee-joint depends much more on its ligaments. As soon these are inflamed they yield a little, and a sense of weakness is observed. Further, owing to the superficial character of the joint, fluid in it can quickly be detected and points tender to pressure found by the patient. Again, osteophytic deposits having occurred, they, or loose synovial fringes, may become impacted between joint surfaces, leading to locking of the joint, attacks of inflammation, &c. Thus, knee-joint cases come earlier under observation than those of the hip.

Blood-supply.—Just as its superficial position and its character bring the knee-joint earlier under treatment, so that position with its rich supply of blood-vessels aids in recovery. Looking upon the treatment as a combination of active hyperæmia with deep massage, we can see why this acts in the one joint and fails in the other. The light applied to the knee causes its blood-vessels to dilate and bathe all the tissues in a flow of lymph. Then the electric current is applied. The whole body is alternately charged and discharged from the knee, and at each discharge every muscle fibre in the neighbourhood contracts, acting as a pump to help the blood and lymph upon its way.

Depth from surface.—The knee-joint is thus easily reached by the forces brought to bear upon it, but the hip-joint is deep-seated and has relatively a poor blood-supply. It is improbable that the light penetrates far enough to dilate the deep vessels. Again, it is difficult to apply the electric current in sufficient strength to penetrate deeply enough, as these cases are often very tender to the wave current. Cases not tender are those in which destruction of bone predominates and which are certainly past all remedy. My hip-joint cases laboured under another disadvantage—that of age. The average age was 65 years, against 49 years in the knee cases.

The other cases are hardly numerous enough to call for comment. Theoretically, ankles, elbows, and shoulders should all do better than hips. In future I should be inclined to treat hip-joints by diathermy followed by the static wave current. As the highest temperature produced by diathermy is midway between the two electrodes, we would get it just where it is wanted—in the joint, and the subsequent static deep massage could be given with greater hope of benefit.

In conclusion, I should point out that these results are obtained with a high candle-power lamp giving at least 500 c p. from a single filament. I now use 3000 c.p. and think it is better than the lower c.p. lamp. The static machine used should be capable of giving at least an 18-inch spark between prime conductors with one side grounded. With suitable electrodes and a sufficient interval between contraction, very powerful and penetrating currents are tolerated. In treating the knee, for instance, an 18-inch spark gap is borne with ease.

Welbeck-street, W.

NOTE ON A CASE OF HEART-BLOCK SHOWING LARGE AURICULAR WAVES IN THE FEMORAL TRACING.

BY A. W. FALCONER, M.D. ABERD., M.R.C.P. LOND.,
ASSISTANT PHYSICIAN, ABERDEEN ROYAL INFIRMARY.

THE following case was admitted into the Aberdeen Royal Infirmary on June 17th, 1915, under the care of Professor A. W. Mackintosh, to whom I am indebted for permission to publish it.

The patient, a male aged 60, had for some two months suffered from shortness of breath on exertion, but he had continued at work until June 15th. On that date he had an attack of giddiness and vomiting. On attempting to get out of bed next day he lost consciousness, and came to himself on the floor with a cut on his head.

On admission to hospital the patient lay in bed in any position, without discomfort. His only complaint was the frequent occurrence of "queer turns," during which he frequently lost consciousness. While under observation he had numerous typical epileptiform attacks, associated with marked slowing of the pulse. The apex beat of the heart was in the fifth interspace just inside the nipple line. There was a slight mitral systolic murmur. The ventricular beats were at times as slow as 12 a minute, and between the ventricular beats regular auricular beats could be very distinctly heard. These contractions could be heard both at the base and the apex, but were most distinctly heard over the apex. For some time after admission the pulse-rate varied from 12 to 18 beats a minute. A fortnight after admission it rose to 60, but in a week it again fell to between 32 and 40. During the first fortnight the patient had numerous long ventricular pauses, many of which were accompanied by epileptiform or giddy attacks. During this period the breathing was very markedly of the Cheyne-Stokes type, but later with the diminution of the heart-block the Cheyne-Stokes respiration disappeared. For some days after admission the ventricular rate varied from 12 to 18 a minute, the auricular rate remaining constant at 78. The ventricular rate was never absolutely regular for more than a few beats, and there were frequent long ventricular pauses.

In Fig. 1 the upper tracing is from the jugular vein, the lower from the radial artery. The time-marker is one-fifth of a second. During the long pause in the radial tracing the auricular beats continued unaltered.

FIG. 1.



FIG. 2.

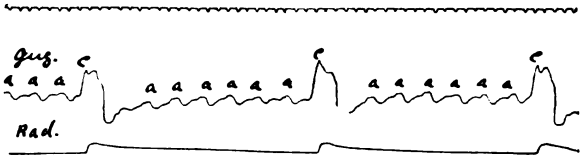
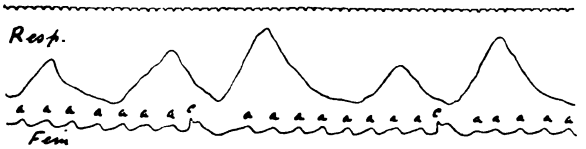


FIG. 3.



In Fig. 2 the upper jugular tracing shows a regular auricular rate of 78; the lower radial tracing a slow, irregular ventricular rhythm. It will be noted that there is no evidence of auricular waves in the radial tracing.

Fig. 3 is a continuation of the same tracing, in which the upper tracing represents the respiration, and the lower tracing is taken from the femoral artery immediately below Poupart's ligament by means of a Mackenzie tambour. It will be seen that there is the same slow ventricular rhythm as in Fig. 2, but there are in addition a series of large waves of exactly the same rate as the auricular waves in the jugular tracing in Fig. 2. There can be no doubt that these waves are of auricular origin, but as there is no evidence of similar waves in the radial tracing they cannot be true arterial waves. The femoral vein lies alongside the femoral artery, and, as Keith[1] has shown, the right auricle, vena cava, iliac and femoral veins form a cistern shut off from the venous system of the lower extremities by strong valves situated in the common femoral veins from 10 to 25 mm. below Poupart's ligament. I am of opinion, therefore, that these waves are not true arterial waves, but venous waves transmitted from the femoral vein.

The only other point of particular interest in the case was the occurrence of the long ventricular pauses. These only occurred during the time the patient was exhibiting marked Cheyne-Stokes breathing and disappeared when the Cheyne-Stokes breathing ceased. The long ventricular pauses always occurred exactly at the commencement of respiration following the period of apnœa. Fig. 4 is a simultaneous tracing of the respiration and the radial pulse showing this relationship.

FIG. 4.

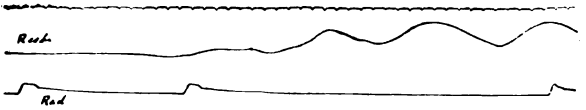
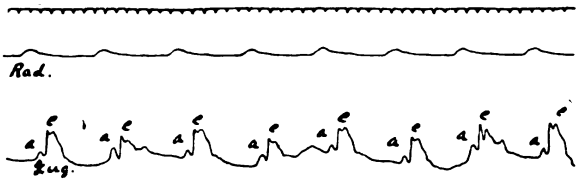


FIG. 5.



Three weeks after admission to hospital the condition of heart block passed off. Fig. 5, obtained on July 7th, shows a normal rhythm with a normal *a-c* interval. Later a 2-1 heart block again appeared and the patient was discharged from hospital on August 4th with this rhythm still present.

[1] Journal of Anatomy and Physiology, vol. xlii., p. 1.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

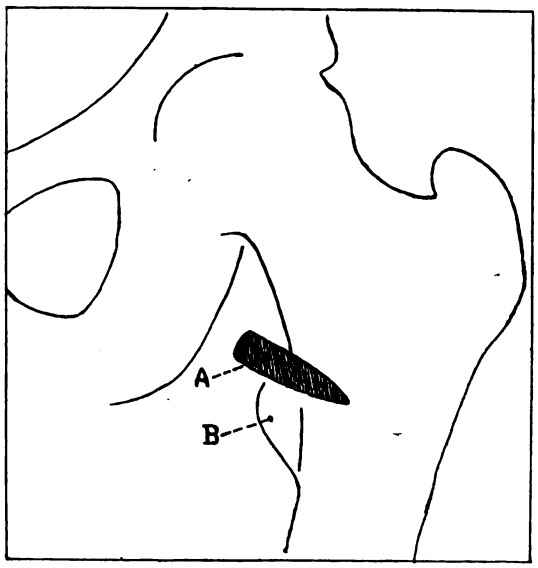
LATENT GAS BACILLUS INFECTION IN A HEALED BULLET WOUND.

BY D. PEARCE PENHALLOW, M.D.,
CHIEF SURGEON, AMERICAN WOMEN'S WAR HOSPITAL, PAIGNTON.

WHILE it is true that most of the gunshot wounds which are seen are infected to a greater or less extent, nevertheless not all of them give rise to clinical symptoms, and many heal in such a way as would lead one to believe that there was no infection. There has always been a certain amount of discussion as to the amount of infection carried in by bullets, and while we know that infected material, such as clothing, is carried in and may cause a badly infected wound, we also know that many wounds will heal very rapidly with no evidence of infection, and yet an infection may light up in such a wound if, even after a considerable lapse of time, any operative procedures are necessary in the scar track formed by the projectile.

The following case is reported as illustrating this fact and also as showing a very severe gas bacillus infection following the removal of a bullet from a thigh several weeks after the soldier had been wounded and after the wound was entirely healed.

Private ——, aged 29, while making a charge at the Dardanelles on August 8th, 1915, was wounded through the left hip. He crawled into a shelter out of the line of fire and had to remain there for 10 hours before he could be brought back. He was then taken to the dressing station where the



Tracing from radiogram showing the bullet A lying in the region of lesser trochanter B.

wound was treated. The next day, while being transferred on a stretcher, he received another bullet in his right hip. He was put on a hospital ship and transferred to Alexandria, where one bullet was removed from just above the knee. He was admitted to the American Women's War Hospital, Paignton, on August 26th. Examination at that time as follows. Well-developed nourished man, came in as an ambulatory case. General physical examination: Negative, save as follows: 2 inches behind anterior superior spine on right side is a small healed wound. Just on outer side of right leg 1½ inches above right knee is a small incised wound, slightly infected, where bullet was removed. On left side just over tuberosity of ischium is a small healed wound. Palpation about ischium elicits considerable pain; patient unable to sit on left side, as left buttock is very tender, and he states that it feels as if something sharp were sticking into him. X ray taken shows bullet lying in region of lesser trochanter and posterior to it. The wound just above the knee healed uneventfully. There was considerable doubt as to whether it would be wiser to remove the bullet from the thigh or to allow it to remain. The patient, however, complained so much of pain on sitting down that it was thought advisable to make an attempt to remove it. The bullet was very carefully localised by means of the fluoroscope on several occasions and showed very little change of position, but remained just on the level of, and posterior to, the lesser trochanter.

Oct. 9th: Operation. With the patient lying on his face a 3-inch incision was made on the posterior aspect of the thigh just below the gluteal fold, the upper limit of the wound being at the fold. The incision was carried down through the deep fascia and the muscles were separated, but it was found impossible to reach the bullet without enlarging the incision upwards, which was done. The bullet could be felt embedded in muscle and lying against the lesser trochanter, but owing to its depth it was found to be very difficult to remove. A counter incision was therefore made in the buttock 2 inches above the upper limits of the first incision, and a finger inserted through this down to the bullet, which could then be manipulated by means of a finger above and a finger below, and by this method it was freed from the surrounding muscles and removed. No evidence of encapsulation and no pus found. The wounds were sutured in layers and closed without drainage. Good ether recovery.

Oct. 10th: Temperature elevated to 102° F., pulse 116. Wound examined, not reddened, but thigh somewhat swollen and tender. Re-dressed. 11th: Temperature in afternoon became elevated to 104° and pulse 120. Wound again examined, and whole thigh found swollen, tense, reddened, and indurated; some crepitation in skin. From the wound itself a brownish serum was exuding, and when the sutures were removed some bubbles of gas escaped. There was also the characteristic odour of gas bacillus infection. The patient was immediately taken again to the operating-room, etherised, and multiple incisions were made on the thigh. Infection was found to be deep down throughout the muscles and fascia. The wound was dressed with hypochlorous acid solution. Culture taken. Bacteriological examination showed abundant B. aerogenes capsulatus. 15th: Condition improved. Temperature became less elevated. Wounds slowly healing up. 20th: Temperature and pulse practically normal. Condition of wounds satisfactory. The wound on buttock made for insertion of finger healed by first intention. 25th: Temperature and pulse normal. Wounds clean and granulating. 30th: Wounds closing and granulating in rapidly. Temperature and pulse normal.

Nov. 12th: Since last note the patient had an uneventful convalescence, except for a slight elevation of temperature following operation for the closing of the wound in the upper part of the thigh in order to prevent a large painful scar. A few stitches at this time were removed and the wound drained, packed with iodoform gauze, and treated with hypochlorous acid. Culture at this time showed staphylococcus, but wound healed very rapidly in spite of it.

Jan. 12th: Wounds entirely healed. The patient up and around ward, and is now ready to be invalided.

It is interesting to note that the wound of entrance in the buttock was entirely healed at the time of admittance to this hospital, and it was not until the tissues had been traumatised by operative interference that any signs of infection manifested themselves. Also, that at the time of operation no evidence of infection, such as encapsulation of bullet or pus, was found.

Paignton.

A CASE OF INTUSSUSCEPTION OF THE VERMIFORM APPENDIX.

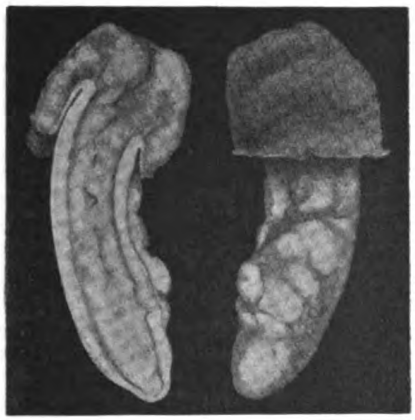
BY W. ALAN CURRY, M.D. MCGILL, F.R.C.S. ENG.,
ACTING SURGEON, GREAT NORTHERN CENTRAL HOSPITAL;
AND
ERNEST H. SHAW, M.R.C.P. LOND.,
DIRECTOR OF CLINICAL PATHOLOGY, GREAT NORTHERN CENTRAL HOSPITAL.

A REASONABLE conclusion to reach after a study of the following case is that the patient probably had several attacks of catarrhal appendicitis, and the last attack resulted in an intussusception into the cæcum.

A girl, aged 8, was admitted to the Great Northern Central Hospital, London, at 6 P.M. on Dec. 19th, 1915. She complained of pain in the stomach for three days. There was nothing of interest in her past history, except that during the previous year she had at least three attacks of epigastric pain accompanied by vomiting, which confined her to bed for a day or two. The present illness dated from Dec. 17th, when she came home from school and complained of abdominal pain and vomited several times.

The bowels were opened the following day after a laxative; no blood or mucus was noticed. Pain was intermittent during the 17th or 18th, and during the exacerbations she would scream out. On admission her temperature was 99·6° F. and her pulse-rate 128. On examination a swelling could be seen beneath the upper portion of the right rectus muscle. On palpation a well-defined mass could be felt in the region of the ascending colon just below the costal margin. There were muscular rigidity and tenderness over it. The chief site of tenderness was over McBurney's point. The abdominal reflexes were present. Rectal examination was negative. The most obvious diagnosis rested between appendicitis with abscess or intussusception.

An operation was promptly performed. A four-inch incision was made through the outer edge of the right rectus sheath and the peritoneal cavity opened. The small intestines were packed off to the inner side by large gauze mattresses. On introducing the hand the mass was distinctly felt in the right hypochondriac region. On delivery



Intussusception of the vermiform appendix.

it proved to be an intussusception of the appendix into the cæcum, which had increased in size at the expense of the cæcum. The cæcum had a well-developed mesentery and was very mobile. The intussusception was readily reduced by compressing the apex until the proximal ¾ inch of the appendix was reached. The appendix could not be further reduced because of the firm adhesions uniting the peritoneal surfaces. The adhesions were separated by means of a probe without any effect. The outer portion of the cæcal wall was œdematous, and its peritoneal covering presented a split about 1 inch in length. The cæcum was shut off by means of an intestinal clamp and the appendix excised, together with about one inch of surrounding cæcal wall. This was closed by a continuous through-and-through stitch of catgut and then buried by interrupted Lembert stitches. The split in the peritoneal coat was also covered in by a few Lembert stitches. A rubber drainage-tube was placed to the outer side of the cæcum and brought out through the lower margin of the wound. The after-history was uneventful. The drainage-tube was removed in 48 hours, and the patient made an uneventful recovery.

Description of specimen.—The specimen consists of the vermiform appendix and a portion of the wall of the cæcum. The appendix is 1¾ inch in length, and its proximal end is invaginated for about 1/3 inch into the cæcal wall. The peritoneal blood-vessels of the appendix are congested and the tube is thickened and firm. The cæcal mucous membrane is much swollen and congested. A longitudinal section through the specimen reveals a thick muscular wall and the lumen filled with swollen mucous membrane of the appendix. The mucous membrane of the cæcum surrounds the base of the appendix in the form of a large nodular mass. In this mass can be seen the reflected peritoneal coat at the appendix. The lumen of the organ can be traced in the midst of the thick mucous membrane.

Microscopic examination.—All the coats of the appendix are greatly thickened, especially the mucous layer. The epithelium is intact. Groups of small round inflammatory cells are present in the peritoneal covering. At the base of the appendix the tissues are œdematous. The cæcal mucous membrane is necrotic in places. The above changes are similar to those seen in many appendices which have been subject to attacks of "catarrhal" inflammation.

We are indebted to Mr. G. B. Mower White, senior surgeon to the Great Northern Central Hospital, for permission to publish this case.

A CASE OF TETANUS-LIKE SPASM LOCALISED TO THE WOUNDED LIMB.

BY G. T. MULLALLY, M.B., B.S. LOND., F.R.C.S. ENG.,
CAPTAIN, R.A.M.C., SPECIAL RESERVE.

THE following case bears a close resemblance to other cases which have appeared recently in THE LANCET, to which I refer later:—

Private —— was wounded by a shell on the afternoon of Dec. 16th, 1915. After passing through a field ambulance, where he was dressed and given a prophylactic dose of 1500 units of antitetanic serum, he was admitted to the clearing station the same evening. He had evidently lost a large quantity of blood, as he was very blanched and had no radial pulses. He had a compound fracture of the lower end of the right femur, with much laceration of the soft parts and rupture of the femoral vessels. Higher up in the same thigh two fragments of casing, each about the size of a walnut, had entered from behind and lodged under the skin over the anterior aspect of the thigh. In addition the left eye was destroyed and there were some small wounds of the right arm. As his condition improved somewhat with warmth and four pints of axillary saline, I took him into the theatre at about 10 P.M. Since it was evidently impossible to save the right leg, I took it off rapidly by a simple circular amputation of all the tissues in the same plane. I was unable to get above all the damaged area by this means, and as it was I cut across the track of the upper of the two fragments embedded in the thigh, and then cut away as much damaged muscle as I could distinguish at that early stage. At the completion of the operation he was given five pints of saline intravenously. He was much better in the morning, but on the evening of the 17th he looked much worse again, vomited several times, and complained of pain in the stump. His pulse was 160. Examination showed gas gangrene of the whole inner side of the thigh along the track of the fragment already mentioned. He was given gas and the gangrenous area was laid widely open. He remained apparently *in extremis* all the next day, but on the 19th (fourth day) he was better, and as much as possible of the gangrenous area was cut away. He continued to make progress during the next few days, although the wound, of course, remained very foul and did not show much sign of healing. On the 24th (ninth day) he was again taken to the theatre and the remaining sloughs were cut away under an anæsthetic. On the following day the sister reported to me that sleep had been disturbed by twitchings in the stump, which had kept the patient awake but had not been painful. These painless spasms were evoked during the next three days whenever he was dressed, but always passed off in about an hour. There were no other signs of spasm to be detected. I attributed them to an ascending neuritis. On the 28th (thirteenth day), when he was being dressed, the spasms occurred with great intensity, and were accompanied this time by excruciating pain, which caused him to scream and sweat profusely. The pain was so great that I was obliged to give him chloroform almost at once. This attack lasted about an hour, and similar attacks occurred during the same morning. As I was still obsessed with the idea that I was dealing with an ascending neuritis I anæsthetised him again, cut away as much of the anterior crural and sciatic nerves as I could reach, and then injected both trunks, one at Poupart's ligament and the other at the sciatic notch, with absolute alcohol. Both nerves were very red and enormously thickened. He was in no way improved by these measures, and on the following days the attacks recurred again and again and had to be controlled by chloroform, as large doses of morphia and bromides and chloral were quite without effect. The patient rapidly became exhausted, and died on Dec. 31st. He never showed any sign of general spasms, but on the morning of his death his facial expression was distinctly suggestive of a risus sardonicus.

During the case tetanus was, of course, considered, but the symptoms were so atypical that I thought it was most unlikely, and I fell back on the very unsatisfactory label of ascending neuritis. It was not until I saw the articles by Lieutenant-Colonel R. D. Rudolf [1] and Captain T. B. Mouat [2] that I had any further light thrown on the subject. I have not, with the limited means at my disposal, been able to find any other references on the subject, save a brief note of a case described by Pozzi.[3] In view of these cases I feel sure

[1] Tetanus like Spasm Localised to the Wounded Limb, THE LANCET, Nov. 13th, 1915, p. 1084.
[2] A Case of General Tetanus following Localised Tetanic Spasms of the Injured Limb, THE LANCET, Jan. 22nd, 1916, p. 188.
[3] Brit. Med. Jour., Epitome of Current Medical Literature, Jan. 29th, 1916, p. 10.

now that the one I have detailed was tetanus, and that the proper course would have been to administer antitetanic serum intrathecally as soon as the first spasms were noticed.

It is interesting to note that in my case, in Captain Mouat's case, and in one of those described by Colonel Rudolf, the conditions followed immediately on operative interference, which opened up fresh tissues.

Medical Societies.

BRIGHTON AND SUSSEX MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society was held on April 6th, Major A. H. Buck, R.A.M.C. (T.), the President, being in the chair.—Dr. Duncan Forbes read notes on a case of Meningitis following infection of the sphenoid bone, and showed post-mortem specimens illustrating the case. In this case a streptococcal infection had spread from the nasal cavity to the meninges through the sphenoid bone. Interesting points, apart from the very definite evidence of the route of infection, were an illness lasting 17 days with no rise of temperature until the twelfth day of illness; Kernig's sign following neck stiffness; and persistent severe headache throughout, and swelling over the temporal fossa.—Major C. F. Bailey showed a skiagram of Two Separate Calculi in the Left Ureter of a woman. Mr. D. W. Livingstone and Major T. H. Ionides, under whose joint care the patient had been, described the case, which was discussed by the President.—Dr. A. Winkelried Williams showed specimens illustrating a case of Rodent Ulcer in a young man. Both lower eyelids were affected and there were two growths on the side of the nose.—Captain W. Barrington Prowse read a paper entitled "Some Notes on the Use and Misuse of X Rays." He referred to their extremely wide field of usefulness in medicine and surgery, both for diagnosis and treatment, and the necessity for specialisation in this branch of medical work, and deplored the fact that the use of X rays by unqualified or even uneducated men was allowed, and even sometimes encouraged. There was a tendency to look upon radiography too much as simply photographic work to supply definite black and white evidence, and the necessity for the extremely careful handling of this evidence was often overlooked. There should be a much closer consultation between the radiologist and the medical man in charge of the case under examination. Some of the physical properties of X rays were discussed, and their bearing upon radiographic work in general, and upon special cases in particular, and it was pointed out how faulty technique would lead to error and wrong diagnosis. Mechanical and other difficulties in their application were also referred to, and the means by which they are overcome. With regard to particular uses in diagnosis, special attention was drawn to the necessity for an X ray examination in all cases of injury or possible injury to the bony skeleton, and the impossibility of trusting to a screen examination alone for a diagnosis of absence of fracture. The localisation of foreign bodies and the diagnosis of abnormal conditions in the various regions of the body were discussed, special mention being made of tubercle in connexion with the various forms of chronic disease in the bones and joints, and also as regards the diagnosis of its presence in the lung. The use of bismuth and X rays in the investigation of diseases of the digestive organs was also specially referred to, and the influence it has had upon our knowledge of the alimentary canal and what takes place in it. In dealing with examinations of the urinary tract for stone, &c., the necessity for a complete investigation of the whole tract was pointed out, and also the necessity for a very thorough preparation of the patient beforehand. Turning to treatment, some general remarks were made upon the influence of the rays upon living tissues, on the different effects of mild and heavy doses, their cumulative effects, and so-called selective action. The need for extreme care in the therapeutic use of X rays was insisted upon, and some general indications were given of the circumstances in which they were most likely to be useful. Various diseases in which they had been used with success were mentioned, and in speaking of parasitic diseases of the hair exception was taken to routine employment in cases of ringworm. Their value in malignant disease was briefly discussed, and the reasons for limitation of usefulness in this condition were referred to.—The paper was discussed by the President, who emphasised the supreme importance of the use of X rays in cases of fracture. He pointed out the difficulties caused by the movement of foreign bodies in the abdomen and in joints, and quoted a case of myositis ossificans. Foreign bodies in the pelvis were hard to locate owing to the difficulty of obtaining a satisfactory lateral view.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.—A clinical meeting of this society was held on April 7th, Dr. Leonard C. T. Dobson, the President, being in the chair.—Among the cases shown were the following:—Mr. H. Tyrrell Gray: 1. Sarcoma of Tibia in a male, aged 10 years, treated by radium. 2. "Club Hand," congenital absence of radius; bone graft; result (with skiagram); female, aged 2¾ years. 3. Knee-joint Changes in a female child, aged 11 years, resembling osteo-arthritis of adults (? throat infection) (with skiagrams). 4. Central Tuberculosis of Radius in a female aged 4 years; excision of half radius; bone graft; result. 5. Carcinoma of Floor of Mouth in a male aged 72 years.—Dr. T. Grainger Stewart: Post-diphtheritic Paralysis in a male aged 10 years.—Dr. A. J. Scott Pinchin: Urticaria with Dermographia in a male aged 10 years.—Dr. J. M. Bernstein: Specific Osteitis of Tibia in a female.—Mr. J. G. Pardoe: Carcinoma of Penis.

New Inventions.

WIRE HELMET FOR CASES OF LOSS OF BONE.

THE helmet here illustrated is constructed of crossed steel wire and is similar to a fencing mask. It is made to a mould, covering the vertex and the underpart of the occiput. The wire-netting is soldered to a ribbon of tin and this is covered by suède. It is claimed for this helmet that it is very protective, easily worn, and causes no pressure at any one point. The hat can be measured to fit over it. It does not overheat the head. The picture shows the helmet adjusted. The shaded circle shows the extent of the loss of bone. The mask was made for me by Messrs. Allen and Hanburys, Ltd., Wigmore-street, London, W., for the case of a man who was wounded at Loos and in consequence has a loss of bone in the right temporal region of 3¾ by 3¾ inches.



GEORGE DAVIS, Captain, R.A.M.C.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—An ordinary meeting of the Council was held on April 13th, Sir Frederic Eve, Vice-President, being in the chair.—A vote of thanks was given to Lady Strathcona for presenting to the Museum two complete skeletons of musk oxen.—It was resolved, on the recommendation of the Library Committee, to continue until further notice the closing of the Library at 6.30 P.M. instead of 7 P.M.—It was resolved, on the recommendation of the Jacksonian Committee, that the Jacksonian Prize should not be awarded for 1915. The subject chosen for the year 1917 is "The Causation, Diagnosis, and Treatment of Traumatic Aneurysm, including Arterio-venous Aneurysm."—On the recommendation of the Triennial Prize Committee it was resolved that the Triennial Prize should not be awarded for the period 1913–15. The subject for the period 1916–18 is "The Development of the Hip-joint and the Knee-joint of Man."—It was resolved, in accordance with the recommendation of the Walker Prize Committee, to award the Walker Prize of £100 to Mr. William Sampson Handley. The Committee drew attention to the excellent investigations carried out by Mr. Handley on the centrifugal spread of mammary cancer by the lymphatics, on which he founded the doctrine of permeation. These investigations have influenced the surgical treatment of cancer of the breast during the last five years.—The Council proceeded to the election of two Members of 20 years' standing: Percy William Bassett-Smith, C.B., R.N., and James Frank Colyer.

THE LANCET.

LONDON: SATURDAY, APRIL 22, 1916.

The Treatment of Venereal Diseases by the State.

THE President of the Local Government Board, Mr. LONG, received last week a deputation from the National Council for Combating Venereal Disease, which came before him to urge that immediate effect should be given to the recommendations of the Royal Commission on Venereal Diseases, particularly to those dealing with the provision of adequate facilities for the diagnosis and treatment of the conditions as they manifest themselves among the mass of the people. The recommendations especially alluded to were those which expressed the view that institutional treatment should, as far as possible, be provided at general hospitals, and that local authorities should, as the first step in the preparation of their schemes, approach the general hospitals in their areas with a view to making arrangements for treatment. It was the view of the Commissioners that treatment at any institution included in a local authority's scheme should be free to all, and that there should be no refusal to treat a patient who is unwilling to go to his own doctor, or who desired to be treated in a particular area where he or she was not resident. It was further recommended, so as to remove practical difficulties as well as natural reluctancies, that special arrangements, such as evening clinics, should be made for the treatment of out-patients at hours convenient to the working classes, and that local authorities should be empowered to supply salvarsan or its substitutes gratuitously. With full knowledge that local authorities vary much in the interpretation of their responsibilities, the Commissioners suggested that in any case where a local authority refused to provide for treatment the Local Government Board should be empowered to make arrangements directly with hospital authorities. Finally, the Commissioners recommended that the expenditure on schemes of treatment should be assisted by grants from Imperial funds, suggesting that the grants should be equivalent to 75 per cent. of the expenditure incurred by local authorities. In this event the Local Government Board would be responsible for the distribution of the grants, and the Commissioners considered that it should be left to the discretion of the Board to lay down the conditions subject to which the grants would be paid. It was to urge upon Mr. LONG the dangers of delay in thus providing for the State treatment of venereal diseases that the deputation attended at the Local Government Board.

It may be remembered that one of the general conclusions of the Commissioners, in summarising their own recommendations, recorded a strong opinion that the conditions now existing, as well as those which must follow on the conclusion of the war, imperatively required immediate action. The percentage of infection in the naval and military forces may not be now greater than it is in normal times; but the total of infected persons has increased, and the opportunities of wide dissemination have increased also. The military authorities are doing their utmost to provide treatment; we have published many communications which show the anxious care and strenuous work which have been and are being expended in this direction. But the civil population requires similar consideration, for it is only too probable that after the war the infection may be widely spread, largely through ignorance, and that in districts previously free the medical profession may have serious incidences of venereal disease to cope with. The Commissioners, with an eye on this sinister probability, expressed conviction that it would not suffice to establish treatment centres in places where sailors and soldiers are congregated, and that these will be needed in most of the larger and in some of the smaller towns. "We realise," they said, "the claims of economy at the present moment, but ..... we believe that all necessary expenditure will be recouped by the results which can be obtained. ..... We wish to lay stress upon the needs of the future. The diminution of the best manhood of the nation, due to the losses of the war, must tell heavily upon the birth-rate, already declining, and upon the numbers of efficient workers. The reasons for combating, by every possible means, diseases which in normal times operate with disastrous effects alike upon the birth-rate and upon working efficiency are, therefore, far more urgent than ever before. Now and in the years to come the question of public health must be a matter of paramount national importance, and no short-sighted parsimony should be permitted to stand in the way of all means that science can suggest and organisation can supply for guarding the present and future generations upon which the restoration of national prosperity must depend."

It would be difficult to put the situation into briefer and more forcible phrases, or show more eloquently upon which side true economy must lie. We are not surprised that Mr. LONG was able to give the deputation introduced by Lord SYDENHAM a favourable answer; it is shown from his words that the advice of the Report of the Royal Commission on Venereal Diseases will shortly be taken in a practical way. When the Report appeared at the beginning of March there was considerable apprehension among those who knew the position, that its shrewd and provident recommendations might fail to be immediately translated into action on the score of the expense to be incurred. Some of the lay papers considered that the needful money, to say nothing of time and skill, could not be spent on the gratuitous treatment of venereal diseases at so critical an era in our history. We ventured to say at the time that this view was short-sighted. By hook or by crook the money should be found for the State treatment of

venereal diseases. The medical profession will play its part with ardour, and a combination of good intent, good science, and good money ought to go far to eradicate venereal diseases from among us, perhaps in a shorter time than a few years ago would have been deemed possible. When the local authorities are finding money they will want to know what it is required for; when they understand, they will give the money with both hands, and will educate their constituencies in order to justify the expenditure. Ignorance will thus be removed, and ignorance, colossal ignorance, is the chief factor in the spread of venereal diseases.

Amputations and Amputation Stumps.

THE Medical Department of the War Office has recently issued a memorandum on the subject of amputations and amputation stumps, a fact indicative of the importance of this surgical procedure. Amputation has been called the opprobrium of surgery, and though this epithet is quite undeserved, for by amputations lives are often saved, yet VELPEAU is in the right when he speaks of amputation as "the last resource of surgery." It is ever the surgeon's endeavour to save a limb if possible, and as an amputation often enables him to preserve life by this sacrifice, an amputation is more fitly termed "an humane operation." The wounds in this war may not produce a high percentage of amputations, but the horrific total of men engaged must lead to an enormous loss of limbs in the aggregate. The fathers of surgery approached the question of amputation from an identical point of view, though their reasoning and consequent procedure have so little in common with ours to-day. It was without doubt the fear of hæmorrhage that restrained the older surgeons from amputating, for we find that HIPPOCRATES speaks only of removing a limb after it has become gangrenous, and he directs that the incision should be made through the dead tissues, where there was no fear of loss of blood; but this operation, if an amputation it may be called, must have been of limited application and of little practical value. To CELSUS can be given the credit of advising that when a mortified limb has to be removed the incision should be made rather in the living tissue than in the dead; and though he says nothing in this connexion of restraining the hæmorrhage by means of ligatures, yet there can be no doubt that he used them in amputations, for he describes their use in hæmorrhage from wounds. The amputation which CELSUS employed was almost a clean cut through all the tissue, though he directed that the soft parts should be retracted as much as possible before the bone was sawn, and he endeavoured to draw the soft tissues together so as partly to cover the bone. We see here the design to produce a comfortable stump, though we do not hear of artificial limbs to be affixed to the stump until many centuries later. GALEN, a century after CELSUS, advised that the section should pass entirely through the dead tissues, and he agreed with HIPPOCRATES in removing the limb at a joint, giving as the reason that it was more speedy. There was clearly here no thought of a useful stump, and the ancient operator's eye was ever fixed upon the point of hæmorrhage. The patient might and probably did usually die, but it was hoped that he would not die actually under the knife and saw. From time to time attempts were made from earliest days to control hæmorrhage by means of tourniquets of one form or another, but they appear to have been inefficient, until in the latter half of the seventeenth century MOREL devised an instrument capable of restraining the loss of blood. The ligature well known to CELSUS was forgotten or at least neglected, and it was not until the time of AMBROISE PARÉ that the ligature regained its rightful place as the most efficient plan of stopping hæmorrhage. And then no widespread use of the re-discovered method took place, while more than a century later many surgeons continued to prefer the use of styptics or the actual cautery.

The principle being established that the incisions for an amputation must pass through healthy tissues, the reasons for amputation became the same however the injury was produced, and whether in civil or military circumstances. If the limb was expected to die it must be removed lest the patient should die, but there was prolonged difference of opinion as to the right moment for interference. Having regard to gunshot wounds alone—that is to say, coming to comparatively modern times—the best moment for amputation has been much discussed, and the most divergent views have been expressed. RICHARD WISEMAN, who has been called the Father of English Surgery, was strongly in favour of amputating as soon as possible, and on the whole that has been the opinion of most surgeons. The chief argument against immediate amputation is that the shock of the amputation will be added to the shock of the injury, and this double shock may prove too much for the patient's strength and he may succumb. About 100 years ago the surgeon-in-chief of the Prussian army issued an order that no amputation whatever should be done for gunshot injuries, with the result that one-half of the men with fractured limbs from this cause died, and many of those who survived were greatly deformed. With this heavy mortality we may compare the results obtained at the same time by LARREY, who had a mortality of only 25 per cent. after primary amputation in gunshot wounds. Before the advent of the antiseptic practice of LISTER it had come to be recognised that in nearly all cases the primary amputation offered a far better chance of recovery than the secondary, the only exception being amputation of the upper part of the thigh. When antiseptic methods began to be employed the death-rate at once fell, and the use of anæsthetics went far to limit the amount of the shock of the operation. Recent researches of CRILE have shown that the degree of shock can be reduced still more by the use of a local anæsthetic concurrently with the general anæsthesia. For various reasons, therefore, the

dangers of amputation have much declined in civil practice, and where in military practice the same advantageous conditions can be obtained the same good results may be expected. But the difficulty of avoiding sepsis and the frequency of multiple wounds and of comminuted fractures form very unfavourable conditions, while many of the cases where shock is present cannot await operation until the ideal anæsthetic technique can be employed—the delay would mean death.

In addition to consideration of the time of the amputation, of how to avoid shock, and of how to control hæmorrhage, the surgeon has to decide on the form of amputation to perform; and in this direction our surgery has much improved with the flexibility introduced by modern operators, who no longer confine themselves to classic routines, but attempt to make their procedures fit individual cases. Yet ancient learning and experience make themselves heard. The simplest and the oldest method of amputation is the circular, in which the skin, the muscles, and the bone are all divided at the same level; this method, which is sometimes associated with the name of ANTYLLUS, differs but little from that described by CELSUS, who, however, endeavoured by traction of the soft parts to saw the bone at a rather higher level. This method has recently been employed at the front with no small measure of success, for in very septic cases it gives the most thorough drainage possible, but it has the disadvantage that some subsequent operation is always required. In spite of this fact, the thoroughness of the drainage and the rapidity with which it can be performed render it an operation of the greatest value in the abnormal surgical conditions obtaining at the front. The circular amputation remained for centuries the regular method of amputation, but in course of time it became modified, the circular division of the skin being followed by a circular division of the muscles at a higher level, the bone being sawn at a higher level still. The names of CHESELDEN and PETIT are associated with this important modification. The results of this operation are, on the whole, very fair over a great range of cases, for though it is exceptional for the bone to be covered in, a very useful stump frequently results. But in all circumstances where no risk is entailed flaps are to-day designed as being the obvious way to secure a stump on which to fix an artificial limb. LOWDHAM, of Exeter, must be credited with the introduction of flaps about the middle of the seventeenth century, and though their formation by dissection was slow and painful before the days of anæsthetics, the introduction of the transfixion method confirmed the flap operation as the procedure of choice. With the use of anæsthetics the light skin flap formed by dissection became possible, and by the adjustment of the relative lengths of the flaps the surgeon found that he could ensure that the scar did not become adherent to the end of the bone.

The question of the best form of amputation, when the immediate risks have been considered, must be decided by the fact that the stump formed by the amputation will in time be required to support an artificial limb. All incisions and all flap arrangements must be made so that the resulting stump may lend itself to a prosthesis. The main purpose of the memorandum of the War Office, to which we have already referred, is to direct the attention of the officers of the Royal Army Medical Corps to the need for great attention being paid to the future usefulness of the stump. Though in most cases the actual site of amputation is determined mainly by the nature and situation of the lesion yet if due attention be paid to the subsequent functional utility of the stump, a slight modification of the amputation may render the stump particularly fitted for the application of an artificial limb. The memorandum has been admirably drawn up, and it should prove of very real value to the surgeon at the front and also at base hospitals, for it will serve to indicate those amputations which form stumps lending themselves conveniently to the fitting of an artificial leg or arm. The first duty of the surgeon about to amputate is to save the life of the patient, but when the risk to life does not overshadow the other desiderata of the operation, due attention should be paid to the needs of the artificial limb. Much of the after-comfort and usefulness of the soldier will depend on the judicious choice of the form of amputation employed.

Annotations.

"Ne quid nimis."

CERTIFYING SURGEONS AND THE COMMITTEE ON RETRENCHMENT.

THE recent report of the Committee on Retrenchment recommended that a saving of £12,500 per annum should be effected by dispensing with the reports of certifying surgeons on accidents. "We understand," the Committee said, "that the reports are now of little value and entail, in all serious cases, a duplication of the reports made by the inspectors. The Committee on Accidents in Factories recommended that legislation should be obtained to enable them to be dispensed with, and we concur in this proposal." A temperately worded memorandum issued by the Incorporated Association of Certifying Factory Surgeons dissents from the advice thus given by the Committee, pointing out that it was requested to suggest economies which might be effected "without detriment to the interests of the State," and examining the proposal from this point of view. This, no doubt, is the position which we all should adopt who criticise any effort made by the Government to diminish expenditure, whether the money which it is proposed to save would under normal conditions pass into our own pockets or into the pockets of others. At a time like this the interests of the State must be paramount, and personal interests must give way to public advantage. The personal interests of the certifying surgeons in this case are estimated for us by the Committee. It is proposed to save £12,500 per annum, an item but a small one in a vast national expenditure, and one against which must be weighed the value of the services dispensed with. This cannot be stated in a pecuniary

form. The certifying surgeon as distinguished from the factory inspector, who may quote the report of the certifying surgeon but cannot duplicate it, is the expert whose knowledge of injuries and of industrial disease and poisoning enables him to determine the causation of the physical conditions submitted to him; it is he only who, as an impartial authority, can decide that alleged physical conditions exist and that they are or are not caused by the accident to which they are attributed. In doing this he is brought into contact with the injured workman, whose story imputing his injuries to the accident he is able to corroborate or to reject. Of special importance is the work done by him in the investigation of cases of industrial poisoning. The Committee on Accidents did not, the memorandum of the Association of Certifying Surgeons points out, say more than that "much" of the certifying surgeons' work might be dispensed with. It did not find that all was superfluous or could safely be done away with. If the present recommendation means that the whole of the sum of £12,500 is to be saved, it implies that useful and superfluous functions are alike to be sacrificed, and we believe that in the case of the former the retrenchment would involve "detriment to the interests of the State."

SCIATICA AND MALINGERING.

THE practical necessity often occurs of diagnosing whether sciatica is genuine in cases suspected of malingering, and Professor G. Boschi describes in *Il Policlinico* (Practical Section, March 26th) a method of arriving at a correct solution. Subjective criteria are not sufficient, and an observant malingerer soon learns that pressure on certain points and movement in certain positions are expected to evoke pain and accommodates his behaviour accordingly; hence other criteria, objective and not capable of simulation, are necessary from a medico-legal point of view. Some of these symptoms are not invariably present; others depend on the gravity of the disease, on its nature or duration, such as, for instance, increase of tendon reflexes, local hypothermia, wasting, scoliosis, and increase in the amount of albumin in the cerebro-spinal fluid as demonstrated recently by Sicard. Professor Boschi, however, calls particular attention to organic expressions of pain apart from the operation of the will, such as pupillary, sphygmographic, and sphygmomanometric reactions. To elicit these Laségue's movement is performed on the affected limb, the angle formed with the plane of the bed when pain is produced being approximately noted; the movement is then repeated on the healthy limb, during which the pulse is counted and the armlet of a Riva-Rocci sphygmomanometer adjusted until the radial pulse is obliterated, and the condition of the pupils is observed. Laségue's movement is now repeated on the affected limb and the patient watched so that he cannot produce pain by other means such as tongue biting. If pain be caused there will be a sharp, transitory, but marked dilatation of the pupil to the extent of 3 to 5 mm. The part that nervous apprehension might play in causing pupillary dilatation would, if differing from that produced by examination of the healthy limb, not exclude painfulness, and as such would corroborate a positive indication. An assistant feels the radial pulse in connexion with the sphygmomanometer; increased arterial pressure caused by the pain will re-establish the pulse, but care must be taken that meanwhile the patient does not try to strain with a closed glottis, which will, as shown by Valsalva, increase artificially the arterial pressure. The assistant then counts the pulse; normally an increase of 8–10 beats a minute is caused by pain. But it is known that neurotic subjects may react to painful stimuli, with a still more marked increase, or, on the other hand, sometimes with slowness or irregularity of pulse, so that variations of this character must be considered also as organic affirmation of painful movements. The control of the reaction on the healthy limb disposes of some of the objections that are sometimes raised against these variations in the pulse—i.e., the indefiniteness and variability of the so-called "normal" with which the result obtained has to be compared, and the fact that numerical increases in the pulse may be due to psychical conditions of anxiety relative to the examination. At any rate, however, and this also applies to the other tests, it is highly improbable that painful stimulation of the affected limb will not cause differences in the reactions described in comparison with similar stimulation of the healthy limb.

RECENT WORK ON HAY FEVER.

Hay fever is chiefly regarded in this country as a very real, rather distressing, but not very serious complaint. It is otherwise in certain parts of America, notably about Baltimore, where it assumes such a severe character that many sufferers have to move into other districts when the spring or autumn fever becomes prevalent, and business may be seriously interfered with solely on this account. It is to that country, therefore, that we find ourselves indebted for some quite important researches on hay fever. There are two flowering groups which appear especially to induce the coryza typical of hay fever—the Graminaceæ, flowering in the spring, and the Compositæ, in the autumn. To one or other, more rarely both, certain people appear to be unduly sensitive, and an ophthalmic and a cutaneous test can be applied which will show whether a person is sensitive or not to one or the other. The character and manner of inducing the reactions are similar to those of tuberculin, but the substance used is a dilute pollen abstract. Dr. G. H. A. Clowes reports in the *Johns Hopkins Hospital Bulletin* for March, 1916, some favourable results which he has gained in the treatment of hay fever by the intravenous injection of dilute extract of the particular pollen to which the individual, by preliminary tests, has been found unduly sensitive. It is best to begin the treatment two or three weeks before the hay fever season commences. 1 c.c. of a solution of 1 in 5000 is injected, and this is repeated every three or four days until 12 injections have been given and the strength of the pollen extract solution has been gradually raised to 1 in 1000. In a series of 100 cases the results were as follows: In 25 to 30 per cent. marked alleviation; in 30 to 40 per cent. marked improvement; no effect in the rest. As regards the latter, however, these individuals were found not to react, or were found to be negative to any particular pollen test, so that it is probable that the special sensitising pollen had not been found for them. The above results were compared with a series of non-treated cases, all of which were badly affected. It is found that sensitiveness to the pollen redevelops at the end of three or four months after a course of injections. It is suggested, however,

that with continuous treatment over three or four years a cure may be effected, as it is noticed that in these cases there is a notable lessening of the attacks. Less effective than the pollen extracts is calcium lactate given in large doses, which also lessens to some extent the sensitiveness to hay fever. It is remarked that this effect is more readily produced in well-nourished individuals. One point hitherto not explained in relation to hay fever is that people may be affected even when living in a big city. But it has been discovered that even in these places the pollen can be found in the air in appreciable quantity.

EXPERIMENTAL DIETS CONTAINING IMPURE MILK-SUGAR.

ACCORDING to an interesting research carried out by Mr. J. C. Drummond in the biochemical laboratory of the Cancer Hospital Research Institute, London, it would appear that milk-sugar under certain circumstances may contain effective amounts of a growth-promoting factor. The results are published in the March number of the *Biochemical Journal*, just issued, and they are in entire agreement with those published in a paper by Mr. E. U. McCollum and Mr. M. Davis in the same journal in 1915. The suspicion was entertained that in many cases the experimental diets, presumably free from indispensable accessory substances, afforded a satisfactory diet because impure milk-sugar had been used and the impurity was an accessory substance. As Mr. Drummond now points out, our knowledge of the action of these unknown factors is so slight that we shall be forced to reconsider many of the conclusions which have been drawn from the results of feeding experiments, involving the use of diets which appear now not to have been pure. By "pure," of course, is meant that the carbohydrates, proteins, and fats present in the diet are free from those indispensable accessory substances to which the name vitamines has been given. It is desirable, therefore, that the experiments where impure milk-sugar was included in the diet should be repeated with milk-sugar about the purity of which there can be no doubt. It is significant that samples of milk-sugar obtained from reliable English firms as "pure" show the presence of a nitrogenous body, the average amount of nitrogen found being 0·024 per cent. There can be no doubt that on the one hand the failures to obtain body-growth with artificial food rations proves that purified elements in the diet were being dealt with, while on the other, when growth was established in similarly prepared diets, the impurities were not completely removed, and these impurities contained the growth-promoting accessory substance. The use of impure milk-sugar is a case in point.

THE FAILURE OF FUMIGATION AS A DISINFECTANT.

IN the *Boston Medical and Surgical Journal* of March 9th, Dr. W. W. Walcott, State District Health Officer of Massachusetts, describes some experiments which he made five years ago in conjunction with Dr. Curtis, chairman of the Newton Board of Health, from which he concludes that fumigation for the purpose of disinfection is useless. On looking up the literature of the subject he found that most of the experiments had been done under laboratory conditions. Dr. Walcott and Dr. Curtis arranged to carry them out as nearly as possible under service conditions. They secured two rooms exactly alike in the Newton Hospital. One was sealed and fumigated and the other used as a control. Inoculations were made upon compresses of cotton, linen, gauze, and sometimes on the wall. They were put on the floor, table, chairs, mantelpiece, window-sill, bed, and at various other places and elevations. Similar inoculations were made in the control room. Laboratory cultures were not used, because of the possibility of their being attenuated, but smears and swabs were taken from noses, throats, and ears in the contagious wards and from suppurating wounds. Thus live, virulent organisms were obtained. Every ordinary method of fumigation was used—sulphur candles, sulphur powder, formaldehyde candles, the apparatus for generating formaldehyde gas from 40 per cent. formaldehyde solution, potassium permanganate and formaldehyde in the proportion of 1 to 2, and a mixture of aluminium sulphate, formaldehyde, quicklime, and water. Fumigation was carried out for periods varying from 24 to 72 hours. All the proprietary preparations were tried under the same conditions. Every morning cultures taken from the fumigated room were examined first. When they were found dead it looked as if fumigation had done some good, but when the control cultures were examined they were also found dead—apparently they had died a natural death. On the other hand, in the case of a proprietary preparation of which one candle was guaranteed to kill every germ in a room, a little shrine was made of these candles and the inoculation placed in the centre. The germs lived through the experiment. The experiments were carried out for nearly a year, and the conclusion was reached that fumigation has no consistent effect upon cultures. The city of Newton therefore made fumigation optional, and ceased to perform it as a matter of routine. Other cities, such as Boston and New York, then discontinued it. Dr. Walcott says that all that is necessary is that the sick room be scrubbed, scoured, painted, and papered, but if this is not possible a good safe rule is to scrub with yellow soap and hot water as high as a man can reach.

MIDDLE-EAR DISEASE DUE TO VINCENT'S ORGANISM.

Vincent's angina is recognised as a fairly common throat affection; microscopical examination of the exudate reveals the small spirillum characteristic of this condition. There is also a certain tendency for the naso-pharynx to be involved. It has only recently been noted, however, that Vincent's spirillum may be responsible for certain cases of middle-ear disease. Dr. J. A. Mulholland has reported in the *Annals of Otology, Rhinology, and Laryngology* 16 cases of this disease. In 13 the seat of the infection was in the middle ear and auditory meatus; in 3 more cases this was associated with mastoiditis with much necrosis, and two of these cases succumbed. The onset of the disease is insidious and not associated with any pyrexia or any marked degree of pain; there is only a free discharge of pus from the external auditory meatus. It is significant that in very many of the cases there was a history of "running ears" for months or even years; in some, considerable disease of the teeth was present. Examination shows much greenish pus, and on the walls of the auditory canal is seen a greyish membrane, which on removal leaves a bleeding surface. Perforation of the drum is frequent. There may be

swelling and œdema of the auricle. Where the mastoid is involved the cavity is filled with a spongy, putrid mass with obliteration of the cortex. It is suggested that the condition is mildly contagious, for 9 of the cases occurred in a single ward, 5 in another, and 2 in a third. Salvarsan was very efficacious. It was given in the powder form dusted into the auditory canal, as well as intravenously. In 4 cases complete recovery ensued in from two days to two weeks. It is known that the nowadays comparatively rare condition, noma, is due to Vincent's spirillum, and in 75 per cent. of these cases salvarsan can notably reduce the ulceration. It is probable that not only the spirillum of relapsing fever and syphilis, but also Vincent's spirillum is closely allied to the trypanosomes.

THE EXTINGUISHING OF SMALL PETROL FIRES.

A SMALL petrol fire in the garage or hangar may easily be the beginning of a serious conflagration, and so a simple means for extinguishing the small fire may render valuable service. The British Fire Prevention Committee have recently carried out a series of tests with the view of finding a simple mixture which when thrown on the fire would extinguish the flames. The mixture ultimately found to give the best results was sawdust and bicarbonate of soda, which has advantages over sand and similar materials as an extinguishing medium for small fires. Sawdust would seem to act by floating on the surface of the inflammable liquid, thus excluding the oxygen of the air and smothering the fire. Ordinary sawdust as obtained from sawmills is reported to be the most suitable for the purpose, but it should be free from shavings and chips of wood, while it does not require to be either specially dried or to contain added moisture. The addition of bicarbonate of soda, although not essential, has certain advantages. In the heat of the flame carbonic acid gas is given off from the bicarbonate of soda adhering to the floating sawdust, and accordingly close to the source of the fire. The gas thus given off helps to extinguish the fire. The committee have found that an effective proportion of bicarbonate of soda to sawdust is 10 lb. of the former to 12 lb. of the latter. They recommend that this mixture be kept in a bin holding eight bushels. In regard to the application of the mixture, the committee recommend that in order to be thoroughly effective it should be applied not only in bulk, but rapidly and systematically, the object being to produce what may be termed a lateral "curtain" or scythe effect. Judging from the number of inquiries which have been made on this subject, many of our readers will be glad to hear of this simple device. The committee are careful to add that so far their investigations have been limited to small quantities of inflammable liquids not exceeding two gallons, and the areas over which they were spread did not exceed six feet square. These conditions are generally met with in motor garages and hangars for which the proposed mixture is, in their opinion, applicable and economical.

THE next annual congress of the Ophthalmological Society of the United Kingdom will be held on Thursday, Friday, and Saturday, May 4th, 5th, and 6th, under the presidency of Mr. Walter H. H. Jessop. The meetings will be held at the rooms of the Royal Society of Medicine, 1, Wimpole-street, London, W., and a clinical meeting at the Central London Ophthalmic Hospital, Judd-street, W.C. Members desirous of reading papers, showing cases, or taking part in the discussions, are requested to communicate as soon as possible with Mr. Elmore Brewerton, 84, Wimpole-street, London, W. It is proposed to hold a museum of drawings and pathological specimens during the congress. Those wishing to exhibit should communicate with Mr. Stephen Mayou, 30, Cavendish-square, W.

THE annual Oration of the Medical Society of London will be delivered in the rooms of the society, 11, Chandos-street, Cavendish-square, on Monday, May 1st, at 8.30 P.M., by Sir StClair Thomson, who has taken as his subject "Shakespeare and Medicine." There will be an exhibition of portraits, books, and other objects of Shakespearian interest.

THE HOSPITAL SATURDAY FUND.

THE forty-second annual meeting of the Fund was held at the Mansion House on April 12th under the presidency of the LORD MAYOR, who announced that the income of the Fund during 1915 was nearly £7000 more than that for 1914, probably due to the recognition on the part of the public of the splendid way in which the metropolitan hospitals had succoured the sick and wounded soldiers.

Sir T. VEZEY STRONG, in moving the adoption of the report and balance-sheet, stated that the income for the year was £46,000, the expenses connected with the collection of that sum having been only 7 per cent., as against 30 per cent. in the year of inauguration. The collection included 100,000 pennies.

Colonel Sir ALFRED PEARCE GOULD, K.C.V.O., delivered an address on the Effects of the War on Work in Civil Hospitals. After making a graceful reference to the memory of the late Sir Thomas Crosby, he said that the central and most important factor in any hospital was the medical staff, supported by the nursing staff. To know whether a hospital was a good one or not, one should not look at the building, the site, the subscription list, or the cost per bed, but at the medical and nursing staffs, and ask whether they were doing their work well and whether the full means of carrying it out efficiently were being supplied by the hospital management. The war had drawn away from civil hospitals a certain number of physicians and surgeons, resulting in more work being thrown upon those remaining. Others were devoting a large part of their time to work in military hospitals in and around London. And the younger men—house physicians and surgeons, radiologists, bacteriologists—had been largely swept up by the organisation of the War Office. That serious depletion had been to some extent met by men who had retired from hospital work coming back to it, and only those who had been through that ordeal would know exactly what it meant. In many cases men who had earned their retirement stayed on and bore the burden and heat of the day, and this was supplemented by men who had not hitherto held hospital appointments stepping in and offering their services. The grave situation had very largely been met by the services of medical women. The entrants at the Women's Medical School in London last October were twice as numerous as in the previous October; the new situation had given a great incentive to women to enter the profession. The demand for nurses in this war had been enormous, and he pointed out that nurses had done their utmost during the last decade to make a real profession of nursing, and were very anxious that it should maintain its high position. But their patriotic feeling had led them to admit as helpers those who had not had a nurse's training, and those who knew something of the feeling of trade unionists on labour dilution would be able to appreciate what the concession meant. And he was glad to find that these helpers were doing splendid work. He concluded by references to the serious interference which must take place in medical education and to the enhanced price of drugs, and appealed earnestly for a continued and increased support in this magnificent struggle for the greatest of all causes.

THE WORK OF THE ROYAL FREE HOSPITAL UNIT IN SERBIA.*[1]

BY JAMES BERRY, F.R.C.S. ENG.

As the summer wore on and the long-expected renewal of active hostilities on the Serbian frontier did not take place the number of patients in our hospitals at Vrnjatchka Banja[2] gradually diminished. On August 9th the total number of in-patients was but 180, on Sept. 8th only 167, and of these about one-tenth were civilians. On July 27th a meeting of the heads of the British units then in Serbia had been summoned at Kragujevatz to discuss the situation with Sir Ralph Paget, the British Commissioner. It was then unanimously agreed that the units should stay in Serbia at least a few weeks longer. Our own unit had already received a letter from the Commander-in-Chief (General Putnik), begging us to remain in Serbia. Later, a circular letter from the Crown Prince was sent to all the units, expressing the hope that the day of their departure would be far distant. It was clear that the horrors of the previous winter, due largely to the lack of doctors, nurses, and sanitary material of all kinds, were still fresh in the minds of the Serbian authorities. They were anxious that we should stay as long as possible with them. In the meantime, although not overburdened with work, we found enough to do with general sanitation and with out-patients.

All through the summer our civilian out-patient department was large, men, women, and children coming often from far-distant villages to receive the advice and medicine bestowed upon them chiefly by Dr. Helen Boyle, Dr. Ada McLaren, Dr. Isabel Inglis, and others, who did admirable work in this sphere of usefulness. The most striking feature of this civilian practice was the great prevalence of all forms of tuberculosis and of diphtheria. The inveterate Serbian custom of living in stuffy, overheated, and ill-ventilated rooms—a custom by no means limited to the poorer classes—is doubtless responsible for the ravages of tubercle in this unfortunate country. The insanitary conditions found in and around most Serbian cottages accounted fully for the prevalence of diphtheria.

Some of the younger patients whom for various reasons we admitted to our wards vomited or passed per anum as many as 50 round worms; nearly every child had at least one round worm. Tapeworms we saw but seldom. The extraordinary prevalence of round worms among both children and adults is doubtless explained by the open and polluted springs and wells from which the vast majority of the rural population obtain their drinking-water.

Renewal of Active Hostilities.

Towards the end of September came the news of Bulgaria's mobilisation. All passenger traffic on the railways was stopped. Some of us who were at Nish at that time saw thousands of troops with guns and stores of all kinds being rushed through to the Bulgarian frontier. At Vrnjatchka Banja day and night troop-trains could be heard running down our valley of the Western Morava on their way to the Eastern front. On Sept. 30th a small party of us had occasion to go to Kragujevatz, the military headquarters and seat of the Arsenal. We arrived just in time to see the end of an Austro-German aeroplane raid. Wild excitement prevailed. A German aeroplane had just been brought down in the centre of the town and all Kragujevatz was jubilant. The mangled and scorched bodies of the unfortunate airmen brought home to us very vividly the horrors of war. The remains of the aeroplane, which we inspected at the arsenal, showed the name of a Stuttgart maker. Early on the following morning we were roused by the sound of fresh firing, and were interested spectators of another air raid in which many bombs were dropped, several civilians and one Austrian prisoner being killed. One bomb fell without exploding in the soft ground of the Stobart camp, at which we were staying, and another did much damage to their stock of marmalade, and, by a few feet, just missed killing a nurse. The object of the raid was evidently the arsenal, into which two or three bombs were actually dropped. A Serb workman was killed, and a couple of bullets penetrated a large petrol tank, but otherwise no harm was done. A good account of this raid has been published by our engineer, Mr. Jan Gordon,[3] who was himself in the arsenal with our motor-car when the bombs fell.

On Oct. 8th a visit to Nish showed the town gaily decorated with flags in excited anticipation of the arrival of French troops who were expected from Salonica on the morrow, but who never came. Crowds of refugees were coming in from Posharevatz, which had just been heavily bombarded from the air. No one seemed to know whether the line from Salonica was still open or not. Among the officials, both Serb and foreign, pessimism was very marked, and not a few indignant remarks were heard about the Allies who had "deserted" Serbia in her time of need. There was among the people, and to a certain extent among the officials, a strong feeling that Serbia, who in the earlier stages of the war had done so much for the allied cause, by decisive victories over the Austrians, should not have been left single-handed to repel a simultaneous invasion by three nations. Although necessarily ignorant of the military reasons which forbade the granting of much-needed help to the sorely tried little nation, we could not help wondering whether these criticisms were not perhaps to some extent justified.

On Oct. 8th the British Commissioner informed us that it was the wish of the Serbian military authorities that the British units should withdraw if the Serbian army found it necessary to retreat, as it was expected they would. By so doing it was hoped that their personnel and stores would be preserved for future service, and they would obviously be of more service both to Serbia and to the allied cause than if they stayed on and became prisoners. They were to hold themselves in readiness to take this step when the expected military orders to this effect arrived, which, however, in our case they never did.

Arrival of Wounded.

Two days later, freshly wounded began to dribble into our hospitals and we heard tales of severe fighting on the northern frontier. But it was not until the 17th that we received a large batch of severely wounded. Among them were several perforating wounds of the brain and numerous compound fractures of the thigh. All wounds had been inflicted at least two or three days previously and most were already septic. We were struck nevertheless by the care that had been taken in the preliminary dressing and splinting of the patients. Nearly all had been caused by shrapnel bullet, a few by rifle-fire, scarcely any by bayonet. An extensive wound of the frontal lobe with much loss of brain substance was treated by being laid freely open, nearly half the left frontal bone having to be removed with trephine and forceps; a large hernia cerebri ensued, but this gradually receded and in a few weeks the patient made a good recovery and seemed but little the worse for his injury. Another, with a depressed but non-perforating shrapnel wound of the right occipital lobe, was on admission completely blind in both eyes; the depressed bone was removed. About three days later he had recovered his sight so far that he could distinguish and name coins shown to him, and was doing very well indeed. Two days later he suddenly complained of violent pains in the head and died in a few hours. Another man, under the care of my colleague, Dr. J. B. Christopherson at the Drzhavna Hospital, had been shot through the centre of the head of the left humerus; a conical German bullet was extracted from the lower part of the right axilla in the mid-axillary line. The patient made an excellent and speedy recovery, but how the great vessels of the mediastinum escaped injury is difficult to explain. Another man was shot transversely through the centre of the thorax, the bullet passing between

* The official name of the unit was Anglo-Serbian Hospital, but in Serbia it was known as the Berry Mission, having been organised by Mr. James Berry and Mrs. Berry, M.D., who appointed a small committee to continue their work of collecting funds during their absence. As many members of the medical and nursing staff and committee were associated with the Royal Free Hospital, which helped the mission in other ways, we give the name which it usually received.—ED. L.

[1] See THE LANCET, Jan. 29th, 1916, p. 270.

[2] The name of our village or little town is *Vrntse*. As Serbian proper names are always declined, the Baths of Vrntse are *Vrnjatchka* Banja, just as one might speak of Harrogate and "Harrogatian" Baths, if a similar practice prevailed here. Another and formerly better-known place in Serbia, much further south, is Vranje; this also has baths, called Vranshka Banja. There was much confusion of all these names, even by members of the English missions.

[3] In his entertaining little book, "The Luck of Thirteen." Smith, Elder, and Co. 1916.

FIG. 1.



Receiving room at the "Terapia" hospital. English nurses with English and Austrian orderlies. Each patient arrived through the window (on the left) and was dressed, shaved, washed, and provided with clean hospital garments before being taken to the ward. By these means all lice and nits were removed before the patient came into the wards, and typhus, although often introduced, never spread to other patients.

the œsophagus and the heart; a left empyema developed. For a time the patient was very ill, but seemed to be on the high road to recovery, when he was transferred to another hospital and we lost sight of him.

On the 15th news came that the Austrians were occupying Posharevatz, Semendria, Belgrade, and Obrenovatz. Also that the Bulgars had penetrated the Eastern frontier at two points, although it was rumoured that they had been driven back again. Major Gashitch, our energetic and esteemed Serb medical director, warned us that we might receive orders to move at very short notice. Packing-cases were brought out by our engineer and made ready for immediate use.

From Oct. 16th till the 18th Vrntse was full of rumours. War on Bulgaria had been declared by the Great Powers, Varna and Bourgas were being bombarded by the Russians, Strumnitza had been occupied by the French, Tsaribrod by the Serbs, the National Bank had been transferred to Prisrend and the military headquarters to Krushevatz. A strange jumble of truth and fiction, but at the time we had no means of separating the one from the other.

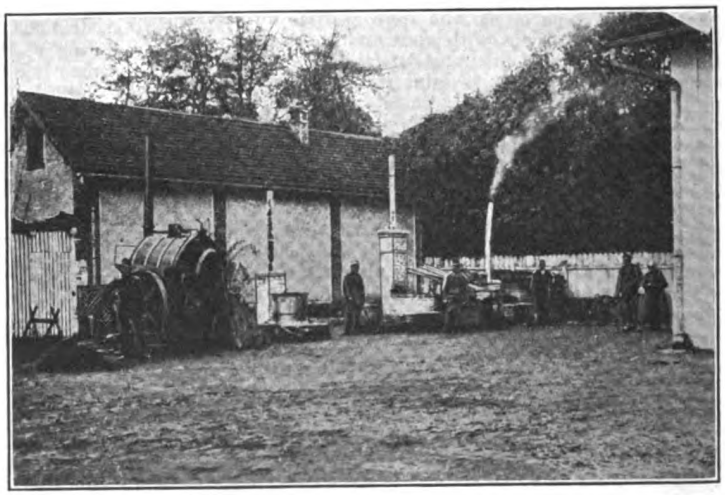
On the 21st a large number of slightly wounded arrived, and as the train which brought them had many severely wounded on board, who went on to the Serb hospital at Chachak, we were indignant at what seemed to us a breach of faith on the part of the military authorities. For months before, when entreated by the Serb military authorities to prolong our stay in Serbia, we had been repeatedly assured, both verbally and in writing, that when fresh fighting began only the most severe surgical cases would be sent to us. On pressing the major for an explanation, we learnt that a secret order had been received that for the present only slightly wounded were to be sent to the foreign missions, as an order for their withdrawal to the south was to be expected at any moment.

On the 27th another trainload of wounded, mostly not very severe cases, arrived, and we were all kept busy. On the 28th important news arrived. Uzhitsa, to the west, at the head of our valley, was being evacuated, and all British missions to the north of us were being withdrawn to the line of the Western Morava; our little town lay some three miles south of this, between Kraljevo and Krushevatz. Kragujevatz, 50 miles (by road) to the north, was being evacuated, the head-quarters staff moving thence to Krushevatz. The seat of government was being transferred to Kraljevo. About this time officials of the public health and some other departments, together with many ex-ministers, sought refuge at Vrnjatchka Banja, the fashionable health resort of Serbia. The place began to be inconveniently overcrowded, and we began to fear shortage of food. The 2nd British Farmers' unit under Mr. Parsons, the Scottish Women's unit under Dr. Alice Hutchison, and several members of the Wounded Allies' Mission under Dr. Apsland arrived, and considerable rearrangement of our hospitals took place. The Farmers, who had been obliged to leave Belgrade very hurriedly during the bombardment, took over our Merkur Hospital and the Scottish Women for a short time had the Atina.

A Difficult Situation.

The British Commissioner now paid us a hurried visit to explain the arrangements he had been trying to make with the Serbian authorities for the withdrawal of the British units to the south or west. Only a very few ox-wagons were obtainable, and it was obvious that most of the units at Vrnjatchka Banja would have to stay and be captured; only individual members, who for one reason or another desired to escape, would have the opportunity of making their way mostly on foot across the mountains to the Adriatic. Three of our unit, together with several of the British Red Cross unit (mostly English orderlies), went off together under the leadership of Mr. Gordon. The adventures and trials which they met with on their difficult trek to S. Giovanni di Medua, have been graphically told by Mr. and Mrs. Gordon in their

FIG. 2.



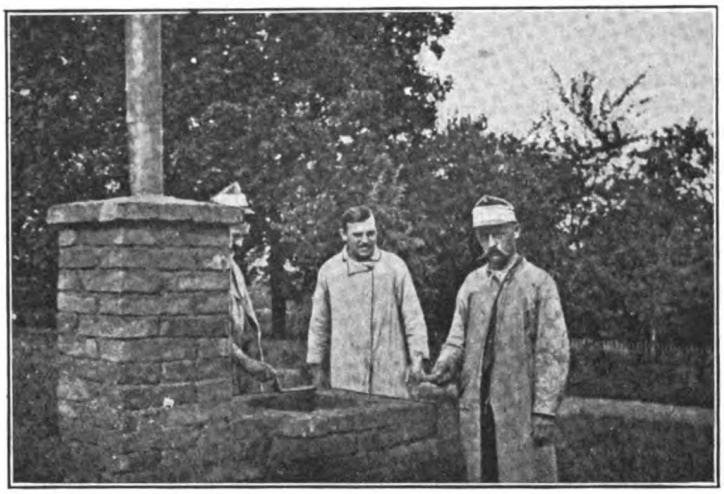
The yard of the "Drzhavna" hospital, showing (right to left) hot-water boiler, destructor for dirty dressings and other refuse, tank for boiling infected clothing, and a "Thresh" disinfector recently arrived (September, 1915) from England. The tanks were made by the local tinsmith, and the brickwork built by Austrian orderlies. (From a photograph by my colleague, Dr. J. B. Christopherson.)

book, already mentioned. The numbers of our unit remained, however, at the average strength of 25, having been reinforced by the addition of the British chaplain and two refugee ladies from Belgrade and Nish.

On Nov. 1st all the Austrian prisoners except four were withdrawn from our hospitals and replaced by 16 Serbian youths with no personal knowledge whatever of hospital work. On the same day our Serbian military head, although giving no direct order, strongly advised us to withdraw also, abandoning all our stores and personal luggage. Dr. Charles Mack, an American doctor, kindly consented to take charge of the hospital if we decided to do so, and the great majority of our members were anxious to go. We knew of a direct short route across the mountains to Rashka, a place which Mrs. Berry and I had visited many years before, and thence it would have been possible to get across *viâ* Novi Bazar and Berane to the Adriatic. But this would have meant walking the whole way, carrying provisions for at least a fortnight. For this it was essential we should have at least three or four horses to carry food and blankets. We were quite determined not to attempt the ordinary route *viâ* Kraljevo and the long, narrow Ibar gorge, which was also known to us, as it was the main route by which the Serb army was retreating, and was likely to be choked by refugees. Our hesitation, which lasted for a few hours, was ended when we found that the horses we had expected to obtain were not available.

On the following day all our Austrian prisoners were restored to us, and the contingent of Serbian youths, who in the meantime had been washed and cleared of lice, in their turn withdrew. A week of considerable anxiety ensued. Again nearly all the Austrian prisoners were taken away, a few only, who desired to remain with us, being allowed to do so. They made their way over the mountains in front of the retreating Serbian army, and we fear that many must have perished in the severe cold that set in some ten days later. Day by day the sound of distant cannonade became louder and louder as the Austro-German forces approached. Rumour said that a stand would be made in our valley at Trstenik, a narrow place some three miles to the east of us. It was said that the digging of trenches had actually begun. It seemed probable that we should find ourselves in the very centre of a battle. Late in the evening of the 6th a violent explosion, which shook the building, caused some of us to exclaim, "Here is the first shell!" But it was caused by our own people blowing up the great bridge of Trstenik. Our Serb commissaire at the Terapia had sought safety in flight, but the Austro-Serbian one at the Drzhavna, M. Milutin Jovanovitch, remained with us and rendered invaluable service. Our wood-supply gave out, and as no more was forthcoming we began cutting down the trees in the grounds of the Terapia.

FIG. 3.



Austrian orderlies building a destructor at the "School" hospital.

Entry of the Enemy.

Early on Nov. 10th a Hungarian lieutenant with half a dozen soldiers arrived, went all over the hospital, asked for a complete list of our personnel, paid us a few compliments on the state of our hospital, put an armed sentry at the gate and departed. In the next few days we had numerous Austro-Hungarian visitors at the hospitals — generals, colonels, a count, and finally Prince Lobkovitz, who took command of the whole district. Colonel Dr. Pick was in charge of all the medical arrangements, and his first act was to confirm the appointment of the heads of our unit, saying he did not wish to interfere in any way with our management of the hospitals and giving us the necessary Austrian authority to continue our hospital work under his nominal supervision. He consulted freely with us and Major Gashitch as to the best means of rearranging the medical work at Vrnjatchka Banja. The Atina was given over for a short time to another English unit, our *baraque* was evacuated and then the school, the latter being quickly filled with crowds of frost-bitten Hungarians returning from the mountains, very severe cold having set in on the 17th. Our own hospitals were now reduced to two, the Terapia and the Drzhavna. Both were overcrowded with Serb wounded; at the former patients overflowed into the corridors, where we put them on improvised trestle-beds and mattresses. The evacuation of the slighter cases was then rapidly carried out, and as frost-bitten Hungarians continued to pour into the town we were asked to admit some of them for whom no other accommodation could be found. This we naturally consented to do. The Medical Director-General of the Austrians in Serbia visited us, and I overheard him telling another officer that all members of the missions would be interned until the end of the war. This was clearly a contravention of the Geneva Convention, and in all discussions with the Austrians on this subject I continued to point this out. We were much surprised to find how little was known of this Convention by all the Austro-Hungarians with whom we came into contact. The best informed was Captain Dr. Otto Panczél, an elderly Hungarian, who before the war had practised as a civilian surgeon at Pancsova and who became our medical commandant after Colonel Pick's departure. To his courtesy, practical good sense, and kindly feeling towards us we were much indebted during our three months under his charge. I cannot refrain from relating an incident which illustrates the curious ideas about English government which are prevalent even among intelligent and well-informed Hungarians. After a long conversation one day with him on the subject of the politics and history of Hungary, he said suddenly, "Well, you English treat your colonies so badly!" "How so?" said I. "Well, you do not allow them to buy or sell except with the mother country," was his answer, and nothing that I could say would move him from his fixed belief that such were the trade relations between England and her colonies. Equally surprising ignorance about circumstances nearer home was displayed by another Hungarian doctor of good family and education, who made to me the common but ridiculous assertion that "the Serbs had killed the Austrian Archduke." He seemed much interested and surprised to learn that Cabrinovitch Prinzip and the other assassins were *Austrian* Slav subjects and not Serbs as the Austrians endeavour to make the world believe.

With regard to food, we fared, on the whole, fairly well. The Austrians allowed us daily rations, which included a little meat; bread varied in quantity from half a loaf per head when it was abundant to one-fifth when it was scarce, as it often was. Besides these we had small quantities of tea, coffee, sugar, and lard, and various other things. A scale of prices was arranged and the peasants were obliged to bring eggs, milk, and other provisions to a central office, whence they were distributed among Austrians, English, and Serbs. Had we been wholly dependent upon the Austrian rations we should have fared

badly, but fortunately our own food stores were by no means exhausted and we had laid in a considerable stock of flour, rice, and live poultry before the invaders arrived. With these stores the enemy never interfered although they occasionally threatened to do so.

On Feb. 18th we were allowed to depart under the charge of a couple of Hungarian guards, who however, behaved towards us rather as couriers than as gaolers, and treated us with the greatest friendliness and courtesy. We travelled viâ Belgrade, Budapest, and Vienna, to Bludenz on the Swiss frontier, where we were detained nine days, to ensure that any military news that we might bring from Serbia should be stale. We reached Zürich on March 2nd, and thence came home viâ Pontarlier and Paris, the French military authorities giving us free passes through France and treating us with the utmost respect and courtesy.

REPORT OF THE COUNTY MEDICAL OFFICER OF HEALTH AND SCHOOL MEDICAL OFFICER OF LONDON FOR 1914.

(*Concluded from p. 834.*)

PART II.—EDUCATION.

APPRECIATIVE reference has frequently been made in these columns to the coördination of the Public Health and Education Departments which was achieved by the London County Council in 1911. The experience of another complete year as to the working of the new system is now available.

In the course of the year 1913 inquiry was made by the Board of Education into the operation of the Council's scheme of medical inspection and treatment. In a letter reproduced in the medical officer's report for that year the Board suggested some modifications of the scheme. On certain important points, however, the Council's reply had not been agreed upon in time to allow of its appearance in the report for 1913, then almost ready for press. The reply will, however, be found in full at pp. 83–5 of the present volume. The question of the medical staff, as regards its numerical strength, duties, and permanency, was already engaging the Council's attention at the date of receipt of the Board's letter. As a result the duties of the assistant school inspectors have been rearranged, so that their services are now utilised for the whole field of public health work. Moreover, the organising staff has been increased, a definite proportion of its members being allocated to the Public Health Department. Additional facilities for nursing treatment have also been secured, and arrangements have been made that the doctor in charge should be satisfactorily informed respecting the antecedents of children presented for treatment.

In spite of unforeseen difficulties due to war conditions, by which progress has in some degree been retarded, it is encouraging to realise that the arrangements above specified are already in actual operation. On the other hand, considerable disturbance of staff routine has unavoidably taken place. In the treatment centres and hospitals many changes of personnel have occurred, thus interfering to some extent with continuity of method. Owing to the absence on military duty of the permanent school doctor, it has at times been necessary to carry on the work with the aid of temporary substitutes. Inconvenience has also arisen from inevitable changes in the nursing staff. In these circumstances it will be necessary to await the return of normal conditions before a reliable estimate can be formed of the value of the rearrangements hitherto effected.

Medical Inspection of School Children.

In the earlier months of 1914 the work of inspection was carried out, in accordance with the suggestions of the Board of Education, by 35 assistant medical officers under the direction of 5 divisional chiefs. On the outbreak of war several of these officers were called up for military duty, their places being generally filled by medical practitioners devoting part of their time to the work. This inspecting staff was assisted by 106 certificated nurses, who prepared the children for examination and helped in the weighing and measuring processes and in the testing of vision. In the course of the year more than 294,000 children were medically examined, and of these about one-third were found to need treatment. Comparing the results of this examination with those of the two preceding years a gratifying amendment was observed. Steady improvement in cleanliness and neatness was manifest, reflecting great credit on the school nurses, the head teachers, and the workers of the Care Committee. In accordance with the regulations of the Board of Education examination is required of all *entrants* and *leavers*, and in addition an intermediate group of children aged 8–9 years are regularly examined. Consequently there are now three sets of complete records, and the results of inspection in the several years can be readily compared. The term "entrant" is limited to infants under 6, the term "leaver" to children of 12 years and upwards. At the time of inspection the mother is invited to be present. A representative of the Care Committee is likewise asked to attend in order to secure that each child shall receive the medical treatment prescribed. Experience proves that, although starting school-life on an equality with boys, the girls on leaving show excessive tendency to defects of eye and heart, as well as a greater liability to anæmia and to nervous diseases. These facts suggest that girls for the most part lead a less healthy home-life than their brothers. At the time of medical inspection the height and weight of children are recorded. They are classified as to condition of clothing, state of nutrition, cleanliness of head and body, and state of teeth. The averages are said to be very constant. It is noteworthy that entrants are generally cleaner than older children, but that girls, in consequence of wearing long hair, more frequently suffer from dirty and verminous heads than boys. In regard to cleanliness of body, however, the girls appear to advantage. The record of steady improvement during the three years as regards the cleanliness of the children and the sufficiency of their clothing is the most encouraging feature of these inspections. Although it is to be deplored that even now the heads of only 67 per cent. of the girls are completely free from traces of vermin, it must be remembered that ten years ago instead of 67 per cent. being clean, in those days over 67 per cent. were verminous.

Adenoids and enlarged tonsils.—The proportion of children now found thus affected is less than formerly. The reduction is greatest at the higher ages, a fact which may be accepted as an indication that present facilities for treatment are playing an important part in improving the health of school children.

Enlarged glands of the neck.—Considerable improvement is reported under this head also. The percentage of children thus ailing fell from 10·5 in 1913 to 8·8 in the recent year, and only 1 in 20 of these was considered sufficiently ill to require operative interference.

Disease of thyroid gland.—Considerable attention has lately been directed to abnormalities of this gland, especially in those cases in which there exists deficiency of secretion, leading to retardation of mental and bodily growth, and even to idiotcy. The effects of over-action of the gland in adults, constituting exophthalmic goitre, are well known, but to the beginnings of this condition in children little attention has hitherto been paid. Dr. Louis Leipoldt, a former member of the staff, has carefully investigated this question. Out of 5000 children examined he found 52 cases in which symptoms of this over-action were detected. Of these 52 children not fewer than 42 presented definite evidence of septic absorption, either from carious teeth, otorrhœa, or inflamed tonsils. He refers to the striking improvement effected by dental treatment in certain of these cases—the thyroid enlargement disappeared and the usual nervous symptoms abated. Dr. Leipoldt's investigations show that undetected septic conditions in childhood sometimes produce far-reaching ill-effects. They furnish additional reasons for inducing parents to obtain treatment for all children found defective in this respect.

Medical and Dental Treatment.

During the last three years the facilities provided in London for the medical treatment of school children have been materially increased. For all classes of ailment treated under the Council's scheme the "centres," including hospitals, at the end of the year numbered 42, providing for 98,976 children, as against 34 centres for 84,359 children at the end of 1913. Owing chiefly to the great demand

for dental treatment the requirements of the scheme have grown to unexpected proportions. For the year ended April, 1915, out of 125,000 cases attended to more than half were for dental defects. The county medical officer reports favourably of the treatment scheme. The attendance of the children has been generally good. Difficulties have, not unnaturally, been encountered in persuading parents to accept treatment for their children, but in order to overcome them two well-devised measures have been adopted during the year. The first measure provides that time spent at a school treatment centre shall be regarded as "school attendance." This provision at once removes a difficulty felt by teachers as well as parents, who are obviously interested in securing regularity of attendance at school. The second measure enables parents and children visiting treatment centres to travel any distance in a tramcar at the rate of ½d. for each person. The average course of treatment entails three journeys to and from the hospital. Assuming that the parent accompanies the child on each occasion, the total number of journeys would be 12, and if the ordinary fare per journey be 1½d. the total saving to the parent as a result of this concession would be 1s. This arrangement is reported to be appreciated generally by the parents, although as yet it is too early to speak confidently of the effect of the plan in encouraging parents to accept medical treatment for their offspring.

"Following-up": Reinspections.—It is evident that considerable increase in the work of following-up must be involved in every material extension of a treatment scheme. Fortunately the Council has received valuable help from a large body of voluntary workers, by virtue of which each group of schools is now provided with its own "Care Committee." Each school Care Committee is assisted by a staff of "organisers" by whose praiseworthy activities, in connexion with medical work, the success of the Council's treatment scheme has been ensured. Among various ways in which the Care Committee is helpful to the education authority in its oversight of school children the following may be noted: Attending at the medical inspections to explain to mothers the directions of the doctor; advising the parent as to how to secure treatment for her child; home visiting to secure that continuous treatment shall be maintained; arranging for the provision of food for necessitous children, and for the admission of suitable cases to convalescent homes or hospitals. During the year 84,500 reinspections of defective children were made. The results show that about half of the children found defective at the first inspection had commenced to receive treatment by the end of the first six months, and almost a quarter of the remainder after a further six months. In cases of ear, nose, and throat trouble and of dental defects difficulty was at first experienced, but this is steadily diminishing. The success of the Council's scheme is shown by the ascertained fact that children are more rapidly and satisfactorily dealt with under that scheme than by other methods of treatment.

Government grants.—By the regulations of the Board of Education it is provided that local authorities can now receive grants in respect of medical inspection as well as of medical treatment and work ancillary to treatment. The amount received for the year 1913 was £31,191, or 48 per cent. of the total expenditure on these services. For the year 1914 the amount was £38,149. Particulars of the conditions relating to the grants are contained in the letter of the Board of Education, which is appended to the present report.

Open-Air Schools.

Both the open-air schools established by the Council have been in full operation throughout the winter months. The excellent results of former years have been fully maintained. Further accommodation in schools of this type is needed in all parts of London, but particularly in the districts north of the Thames. The increasing efficiency of open-air treatment in the case of tuberculous children is beginning to make itself felt in both the schools of the County Council. Children are now returning thither from sanatorium treatment who require education on the open-air system, in order to maintain the improvement already accomplished in their physical condition.

Birley House and Shooter's Hill Schools.—The work in these schools has been continued on the same lines as in past years, and with equally good results. At Birley House all the children were re-examined in March, 1914, and 48 of them were returned to their former schools, while 38 were retained for another year, and were joined by 60 fresh pupils selected by the school medical officer as suitable for education there. At Shooter's Hill two bungalows are provided for use in stormy weather, but where possible classes are held in the open air. Three hours and a half are devoted daily to study, including manual work, and nearly two hours to sleep—in summer immediately after dinner. In accordance with the special war provisions the children are dismissed to their homes at 4 P.M. The school is open continuously throughout the winter, and the open-air principle is adhered to, the windows being kept widely open, whilst good fires are maintained in the bungalows. During the year the average attendance was 100, drawn chiefly from readily accessible districts. At the resumption of work in April the places of 26 old pupils were filled by 32 newcomers.

Kensal House Tuberculosis School.—The number of children on the roll here average 95. Since the opening of the school 230 children have been admitted, of whom 29 were allowed to engage in suitable work away from school; 15 returned to elementary schools, 12 entered convalescent homes, and 36 were excluded on medical grounds. The results of the year's work are distinctly encouraging: there is a marked improvement in the children with very few exceptions, which may readily be accounted for. The joiners' class has been successful, and so has the swimming class, the children attending the latter being specially selected by the medical officer. The dispensary authorities have provided free dinners and other assistance in cases of extreme poverty.

In concluding a brief review of Dr. W. H. Hamer's third annual report as medical officer of health and school medical officer we would express our sense of the high value of his work in both capacities in spite of inevitable difficulties resulting from war conditions. Little but the leading features of this instructive volume have been noticed here, but we confidently recommend the study of the report as a whole to our readers.

NATIONAL LEAGUE FOR PHYSICAL EDUCATION AND IMPROVEMENT.—A course of lectures on the Care of the School Child will be held at the London Day Training College, Southampton-row, on Wednesdays from 5.30 to 6.30 P.M., from May 3rd to July 19th. Particulars may be obtained from the Secretary, 4, Tavistock-square, W.C.

ROYAL COLLEGE OF PHYSICIANS OF LONDON: ELECTION OF PRESIDENT.—A Comitia was held on April 17th, Dr. Frederick Taylor, the President, being in the chair. The President delivered the usual address, in the course of which he referred to the honours conferred on Fellows, Members, and Licentiates during the year, including those received in connexion with medical service in the war. He also mentioned the lectures delivered in the College, and the medals, prizes, and scholarships which had been awarded. Reference was also made to the report, which had been adopted by the College, on the duties of medical practitioners in connexion with criminal abortion. He briefly explained the formation of the Central Medical War Committee, of which he had become a member, and also the election of an advisory committee in conjunction with the Royal College of Surgeons of England to advise the Government through the Central Medical War Committee. The President then read obituary notices of ten Fellows who had died during the year—viz., Dr. Henry Lewis Jones, Sir Peter Eade, Dr. David Bridge Lees, Sir Robert Michael Simon, Dr. Robert Maguire, Dr. George Allan Heron, Dr. George Oliver, Sir William Richard Gowers, Dr. Henry Charlton Bastian, and Dr. Thomas Colcott Fox. The President then thanked the College for the courtesy and assistance extended to him by the College officers and Fellows. Sir William Church proposed a vote of thanks to the President for his services during the past year, with a request that the address might be printed. This was duly carried, and the President vacated the chair. The election of President then took place, and Dr. Frederick Taylor was re-elected by a large majority. The Senior Censor (Dr. Percy Kidd) presented him with the insignia of office, and the President gave his faith to the College and thanked the Fellows for having re-elected him. Dr. Norman Moore was re-elected the representative of the College on the General Medical Council. A report from the committee of management was received and adopted recommending that the Leighton Park School, Reading, should be added to the list of institutions recognised by the Examining Board in England for instruction in chemistry, physics, and biology. The President then dissolved the Comitia.

PARIS.

(FROM OUR OWN CORRESPONDENTS.)

The Value of the Metal Helmet.

THE metal helmet is one of the best means thought of latterly for the protection of our soldiers. Nearly 4,000,000 of them have been distributed. Dr. Roussy, of the medical bureau at the Place de Paris, has established statistics to see in what measure the wearing of them has afforded protection and the degree of gravity of the wounds. For 100 wounds received on the rest of the body before the use of helmets there were 8·5 wounds of the cranium, now since they have been worn the proportion is 16·82 per cent., but all the combatants had not worn them at the time the statistics were collated. The results indicate (1) that when the percentage was only 8·5 a large number of men shot in the head (without helmet) have been mortally wounded, dying on the field of battle or in hospital; and (2) that when the percentage was 16 82 the helmet has afforded protection, and the number of wounded men cured or convalescent has been much larger. Also the gravity of the injuries has been far less. I need hardly indicate the fatal nature of head wounds, characterised as they are by coma, blindness, deafness, various paralyses, amnesia, and vertigo, and then by comminuted fractures with loss of cerebral substance, necessitating one or several trephinings which entail large losses of osseous tissue. By the use of the helmet these cranial wounds are rendered relatively of little gravity. Many of the symptoms noted in the cases of those without helmet were not present when helmets were worn, and the patients recovered in little time, and completely, very often without trephining. In a great number of cases the projectile was stopped by the resistance encountered and remained embedded in the metal, or made only a contused wound in the scalp and subjacent external table, or was arrested in the cranial bone without traversing it, or finally the projectile had deviated, thus diminishing the gravity of the wound. All the combatants are convinced of the protective rôle of the helmet, and their confidence increases its value, for it renders them careful to assume it.

Ingenious Apparatus for Maimed Arms.

Professor Laveran has presented to the Academy of Sciences some mechanisms as ingenious as they are practical. By their aid maimed arms have the natural appearance of the member restored, as well as much of their previous ability. The mechanisms, invented by Professor Amar, can, by the movements of the thorax, bring into action a spring and some steel wires. By this means are recovered to a great extent the former movements, even the most delicate, of the forearm and fingers, the latter being replaced by aluminium substitutes. Moreover, there are two categories of apparatus: those for heavy work, permitting the return of the men to their previous occupations; and others, "universal hands," for movements of dexterity the most diverse. Men have been enabled to play the violin, light cigarettes, and give change. The aluminium hand weighs only 350 gm., and with a glove on has quite the usual appearance. The whole apparatus weighs only 500–1100 gm. (the entire arm).

Treatment of Wound Infection.

Strong testimony to the efficacy of wound disinfection by Dakin's fluid, a solution of hypochlorite of soda, is given by Dr. Uffoltz, Directeur du Service de Santé of the 35th French Army Corps, after six months' systematic use in the field. Known as the Carrel method, from its originator Dr. Carrel of the Rockefeller Institute, its principle consists in immediate antiseptic application to the wound. The solution employed, which contains 0·5 to 0 6 per cent. of sodium hypochlorite, is readily prepared by dissolving 140 gm. of dry carbonate of soda (or 400 gm. of the crystallised salt) in 10 litres of tap-water and adding 200 gm. of chloride of lime. The mixture is well shaken, and after half an hour the fluid is siphoned off, and filtered through cotton-wool; 40 gm. boric acid are then added, and the solution is ready for use; it does not keep for more than a week. It is neutral and non-irritating. Applied within six hours of the receipt of the wound it brings about in most cases a localisation of the infective process and its early extinction. Rapid transport of the patient to the ambulance station is essential; the wound is then cleansed by extraction of foreign bodies, splinters, &c. (no sponging allowed), and the fluid thoroughly applied by irrigation. This may be done by instillation of 5 c.c. of the fluid into each tube every two hours or, better, by continuous instillation, drop by drop. Wounded men should not be evacuated from the ambulance station until complete sterilisation of the wound and application of a sterile dressing has been carried out. I am led to point out that this treatment is not a novelty, as is suggested in the lay press. The use of the fluid was discussed last summer at the Academy of Sciences, and in the *Archives de Médecine et de Pharmacie Militaires* for January the satisfactory results in 130 cases of wounds of all degrees of severity are described in detail. The chief points are: absence of both general and local inflammation, of pain, and (to a great extent) of fever; rapid recovery of appetite and of sleep; comfort of the patient; absence of the usual characteristic odour in the wards. The same issue of the *Archives* also contains an exhaustive discussion on bone infection, the result of gunshot wounds, by M. Trutié de Vaucresson, médecin major de 1re classe. The conclusions arrived at are that these *infections tardives* are really a traumatic osteomyelitis, the clinical manifestation being a simple fistula leading to the interior of a much-enlarged bone, in which exists (as revealed by radiography) an abnormal clear space. Pathologically, the fistulous cavity contains necrosing bony tissue in the centre, surrounded by a zone of rarefying osteitis, outside which again is a concentric defensive layer of condensing osteitis, which limits the infection. The treatment consists in free opening of the cavity and removal of all diseased bone, followed by infrequent dressings, well rammed in to ensure healing from the bottom of the wound. Recovery is said to be slow, but sure. It would probably be accelerated if the cleared-out cavity could be closed up with complete asepsis.

Night Blindness in Soldiers.

M. Weekers has reported to the Academy of Medicine that night blindness is now occurring among soldiers. The affected soldiers see very well during the day, but the vision is affected towards evening and especially night, to the extent of the men being completely disorientated. In these subjects, of whom the number is somewhat large, there exists no other functional trouble but insufficient retinal adaptation. It seems that the principal cause of the condition is nervous exhaustion (over-exertion). For hemeralopia hepatic opotherapy in various forms has been recommended, but this treatment appears hardly justified in the present cases. Here above all should be adopted a treatment directed to the cause, holding in view military needs. For the dazzling due to long exposure to strong light yellow glasses are to be worn during the day. It is well to take precautions against ocular fatigue arising from external inflammation or refractive errors. Finally, these men should have a strengthening régime and very varied diet. Exceptionally it may be possible to admit them to hospital for a time to obtain rest and receive a special régime, to which may be added iron or arsenic medication. But M. Weekers is of opinion that hemeralopia alone cannot justify sending these men to the rear.

Against Tuberculosis.

A society has just been constituted in Paris, under the name of the Comité Central d'Assistance aux Militaires Tuberculeux, whose object, inspired alike by benevolence and social hygiene, is to help soldiers invalided owing to tuberculosis since the war began. The action of the central committee will extend over the whole country, and will be exercised in coördinating the efforts of departmental committees, and in furnishing them with indications useful in accomplishing their mission. The tuberculous subject occupies the first rank in the general mortality. It is urgent to create a movement of opinion and to awaken sleeping energies towards both the prevention of tuberculosis and its cure. It is necessary to give to all classes of society practical education on the disease so as to delimit the evil. Also the law should require the tuberculous to profit by the assistance offered by the offices of social hygiene.

April 15th.

VITAL STATISTICS.

VITAL STATISTICS OF LONDON DURING MARCH, 1916.

In the accompanying table will be found summarised complete statistics relating to sickness and mortality in the City of London and in each of the metropolitan boroughs. With regard to the notified cases of infectious diseases, it appears that the number of persons reported to be suffering from one or other of the 10 diseases specified in the table was equal to an annual rate of 5·6 per 1000 of the population, estimated at 4,310,030 in the middle of last year; in the two preceding months the rates were 6·5 and 6·0 per 1000 respectively. The lowest rates last month were recorded in Hammersmith, the City of Westminster, St. Marylebone, Holborn, and the City of London; and the highest rates in Finsbury, Shoreditch, Bethnal Green, Stepney, Battersea, and Greenwich. The prevalence of scarlet fever showed a further decline last month; this disease was proportionally most prevalent in Finsbury, Shoreditch, Bethnal Green, Wandsworth, Deptford, and Greenwich. The Metropolitan Asylums Hospitals contained 1735 scarlet fever patients at the end of last month, against 2431, 2157, and 1956 at the end of the three preceding months; the weekly admissions averaged 208, against 248, 249, and 210 in the three preceding months. The prevalence of diphtheria showed a considerable decline last month; among the several metropolitan boroughs the greatest proportional prevalence of this disease was recorded in Shoreditch, Bethnal Green, Stepney, Bermondsey, and Battersea. The number of diphtheria patients under treatment in the Metropolitan Asylums Hospitals, which had been 1491 and 1538 at the end of the two preceding months, had declined again to 1417 at the end of last month; the weekly admissions averaged 160, against 198 in each of the two preceding months. Enteric fever was rather less prevalent than it had been in other recent months; the 38 cases of this disease notified last month included 7 in Southwark, and 3 each in Islington, Bethnal Green, Stepney, Battersea, and Wandsworth. There were 46 cases of enteric fever under treatment in the Metropolitan Asylums Hospitals at the end of last month, against 44 and 50 in the two preceding months; the weekly average number of new cases admitted to these hospitals, which had been 7 in each of the two preceding months. was again 7 last month. Erysipelas was proportionally most prevalent in Paddington, Shoreditch, Bethnal Green, Poplar, Southwark, Camberwell and Deptford. The 34 cases of puerperal fever notified during the month included 4 in Poplar, and 3 each in Kensington, Fulham, Bethnal Green, and Lambeth. Of the 68 cases of cerebro-spinal meningitis 7 belonged to Lambeth, 5 to Shoreditch, 5 to Southwark, 5 to Wandsworth, and 4 each to Kensington, Fulham, Islington, Hackney, Finsbury, and Bethnal Green; the 4 cases of poliomyelitis belonged respectively to the City of Westminster, St. Marylebone, Hampstead, and Hackney.

The mortality statistics in the table relate to the deaths of persons actually belonging to the several boroughs, the deaths occurring in institutions having been distributed among the boroughs in which the deceased persons had previously resided. During the five weeks ending April 1st, the deaths of 7497 London residents were registered, equal to an annual death-rate of 18·1 per 1000; in the three preceding months the rates were 17·3, 13·5, and 14·5 per 1000 respectively. The death-rates last month ranged from 13·8 in Hampstead, 15·0 in Wandsworth and in Lewisham, 15·1 in Woolwich, 15·2 in Fulham, and 15·3 in Stoke Newington, to 21·3 in Bermondsey, 21·6 in Chelsea, 21·8 in Southwark, 23·5 in Shoreditch, and 25·2 in Finsbury. The 7497 deaths from all causes included 438 which were referred to the principal infectious diseases; of these, 91 resulted from measles, 18 from scarlet fever, 80 from diphtheria, 159 from whooping-cough, 8 from enteric fever, and 82 from diarrhœa and enteritis among children under 2 years of age. The 91 deaths from measles showed a decline of 316 from the corrected average number in the corresponding period of the five preceding years; this disease was proportionally most fatal last month in Hammersmith,

ANALYSIS OF SICKNESS AND MORTALITY STATISTICS IN LONDON DURING MARCH, 1916.

(Specially compiled for THE LANCET.)

CITIES AND BOROUGHS.	Estimated civil population, 1915.	NOTIFIED CASES OF INFECTIOUS DISEASE.												DEATHS FROM PRINCIPAL INFECTIOUS DISEASES.									Deaths from all causes.	Death-rate per 1000 living.
		Small-pox.	Scarlet fever.	Diphtheria.*	Typhus fever.	Enteric fever.	Other continued fevers.	Puerperal fever.	Erysipelas.	Cerebro-spinal meningitis.	Poliomyelitis.	Total.	Annual rate per 1000 persons living.	Small-pox.	Measles.	Scarlet fever.	Diphtheria.*	Whooping-cough.	Enteric fever.	Diarrhœa and enteritis (under 2 years).	Total.	Annual rate per 1000 persons living.		
LONDON...	4,310,030	—	1069	783	—	38	4	34	308	68	4	2308	5·6	—	91	18	80	159	8	82	438	1·1	7497	18·1
West Districts.																								
Paddington	131,397	—	39	15	—	—	—	2	14	—	—	70	5·6	—	1	1	1	5	—	2	10	0·8	224	17·8
Kensington	155,795	—	22	16	—	1	1	3	13	4	—	60	4·0	—	—	—	1	2	—	3	6	0·4	291	19·5
Hammersmith	118,559	—	15	20	—	—	—	—	3	1	—	39	3·4	—	10	—	2	1	—	—	13	1·1	213	18·7
Fulham	151,161	—	33	25	—	1	—	3	9	4	—	75	5·2	—	3	—	2	6	1	9	21	1·4	221	15·2
Chelsea	58,421	—	11	14	—	1	—	1	3	1	—	31	5·5	—	—	—	1	5	—	1	7	1·2	121	21·6
City of Westminster ...	135,104	—	22	10	—	1	—	—	8	3	1	45	3·5	—	—	—	—	1	—	1	2	0·2	217	16·8
North Districts.																								
St. Marylebone	100,260	—	15	7	—	—	—	—	7	1	1	31	3·2	—	3	—	—	1	—	3	7	0·7	182	18·9
Hampstead	81,760	—	14	9	—	1	—	—	6	1	1	32	4·1	—	—	—	1	3	—	1	5	0·6	108	13·8
St. Pancras	200,322	—	40	38	—	1	—	2	14	3	—	98	5·1	—	3	3	5	3	—	3	17	0·9	375	19·5
Islington	316,242	—	94	41	—	3	—	2	13	4	—	157	5·2	—	16	7	4	9	1	8	45	1·5	581	19·2
Stoke Newington... ...	50,527	—	9	8	—	—	—	1	4	1	—	23	4·7	—	—	1	2	—	—	—	3	0·6	74	15·3
Hackney	217,883	—	57	38	—	2	—	1	19	4	1	122	5·8	—	5	—	4	5	1	1	16	0·8	327	15·7
Central Districts.																								
Holborn	40,405	—	4	6	—	1	—	—	—	—	—	11	2·8	—	1	—	1	1	—	2	5	1·3	74	19·1
Finsbury	76,915	—	29	12	—	—	—	1	5	4	—	51	6·9	—	6	—	—	4	—	1	11	1·5	186	25·2
City of London	19,461	—	1	—	—	—	—	—	—	—	—	1	0·5	—	—	—	—	—	—	—	—	—	36	19·3
East Districts.																								
Shoreditch	103,627	—	40	38	—	—	3	—	13	5	—	99	10·0	—	4	—	5	9	—	8	26	2·6	234	23·5
Bethnal Green	120,207	—	38	42	—	3	—	3	19	4	—	109	9·5	—	1	2	—	6	—	1	10	0·9	205	17·8
Stepney	265,731	—	71	74	—	3	—	—	22	3	—	173	6·8	—	14	1	2	13	—	10	40	1·6	487	19·1
Poplar	156,247	—	25	37	—	2	—	4	19	2	—	89	5·9	—	5	—	7	3	—	2	17	1·1	291	19·4
South Districts.																								
Southwark	179,424	—	49	31	—	7	—	—	16	5	—	108	6·3	—	3	—	6	12	1	5	27	1·6	375	21·8
Bermondsey	117,188	—	20	31	—	1	—	—	6	3	—	61	5·4	—	—	—	5	4	—	4	13	1·2	239	21·3
Lambeth	284,188	—	67	40	—	1	—	3	13	7	—	131	4·8	—	1	—	4	5	—	2	12	0·4	522	19·2
Battersea	161,945	—	38	52	—	3	—	1	9	1	—	104	6·7	—	2	1	9	9	—	3	24	1·5	262	16·9
Wandsworth	312,249	—	118	51	—	3	—	1	16	5	—	194	6·5	—	2	—	7	20	1	4	34	1·1	449	15·0
Camberwell	254,385	—	54	33	—	1	—	1	26	1	—	116	4·8	—	1	1	4	6	—	1	13	0·5	412	16·9
Deptford	110,299	—	35	18	—	—	—	2	11	—	—	66	6·2	—	6	1	—	4	—	1	12	1·1	186	17·6
Greenwich	96,385	—	35	29	—	1	—	1	7	—	—	73	7·9	—	4	—	5	7	1	1	18	1·9	181	19·6
Lewisham	164,438	—	37	31	—	—	—	2	6	—	—	76	4·8	—	—	—	1	6	2	4	13	0·8	237	15·0
Woolwich	129,505	—	37	17	—	—	—	—	7	1	—	62	5·0	—	—	—	1	9	—	1	11	0·9	187	15·1
Port of London	—	—	—	—	—	1	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—

* Including membranous croup.

Islington, Finsbury, Stepney, and Deptford. The 18 deaths from scarlet fever were 3 below the corrected average, and included 7 in Islington, 3 in St. Pancras, and 2 in Bethnal Green. The 80 fatal cases of diphtheria were 21 above the average number. The greatest proportional mortality from this disease was recorded in Shoreditch, Poplar, Southwark, Bermondsey, Battersea, and Greenwich. The 159 deaths from whooping-cough were 6 in excess of the corrected average number; this disease was proportionally most fatal last month in Chelsea, Shoreditch, Southwark, Wandsworth, Greenwich, and Woolwich. The 8 fatal cases of enteric fever slightly exceeded the corrected average number, and included 2 in Lewisham and one each in Fulham, Islington, Hackney, Southwark, Wandsworth, and Greenwich. The mortality from diarrhœa and enteritis among children under 2 years of age was proportionally greatest in Fulham, St. Marylebone, Holborn, Shoreditch, Stepney, and Bermondsey. In conclusion, it may be stated that the aggregate mortality in London last month from the principal infectious diseases was 45 per cent. below the average.

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

E. B. Kelley has been entered as a Surgeon for temporary Service in His Majesty's Fleet.

ROYAL ARMY MEDICAL CORPS.

Temporary Major W. T. Prout, C.M.G., to be temporary Lieutenant-Colonel.

The undermentioned Majors to be temporary Lieutenant-Colonels whilst commanding Casualty Clearing Stations:—R. F. Ellery and R. J. Cahill.

The undermentioned are granted temporary rank whilst commanding Field Ambulances:—As Lieutenant-Colonels: Major W. M. B. Sparkes and Major J. G. Bell. As Majors: Captain W. E. Marshall and temporary Captains G. D. McLean and N. K. Wilson. As Captain: Temporary Lieutenant F. D. Johnson.

Major (temporary Lieutenant-Colonel) S. E. Lewis relinquishes his temporary rank on ceasing to command a Field Ambulance.

Temporary Captain H. B. Maunsell relinquishes his commission.

Temporary Captain W. P. Hogg relinquishes his commission on appointment to the Indian Medical Service.

The undermentioned are granted temporary rank whilst employed at the Northamptonshire War Hospital:—Lieutenant-Colonel W. Harding and Major F. J. Stuart.

A. D. Vardon, late Captain, Banffshire Artillery, Volunteers, to be temporary Captain.

The undermentioned temporary Lieutenants relinquish their commissions:—T. A. Brandon and W. G. S. Thomson.

SPECIAL RESERVE OF OFFICERS.

Royal Army Medical Corps.

Captain (temporary Major) H. G. Trayer relinquishes his temporary rank on ceasing to command a Field Ambulance.

The undermentioned Lieutenants to be Captains:—J. H. C. Walker, M. B. King, R. H. Graham, A. G. Fisher, W. Hunt, and C. McL. West.

TERRITORIAL FORCE RESERVE.

Royal Army Medical Corps.

Captain R. G. Wills, from West Lancs Field Ambulance, to be Captain.

TERRITORIAL FORCE.

Royal Army Medical Corps.

Highland Field Ambulance: Captain G. Davidson to be temporary Major whilst commanding a Field Ambulance. Captain (temporary Major) G. Davidson relinquishes his temporary rank on ceasing to command a Field Ambulance.

Welsh Field Ambulance: J. T. Samuel to be Lieutenant.

London Sanitary Company: J. Griffiths to be Lieutenant.

Supernumerary for service with the Officers Training Corps.—W. Wright to be Lieutenant for service with the Medical Unit of the University of London Contingent, Senior Division, O.T.C.

Attached to Units other than Medical Units.—Surgeon-Major E. G. Stocker, from Wessex Divisional Engineers, and Surgeon-Major V. Graham, from Yorks Light Infantry, to be Majors. Captain W. Marley-Cass relinquishes his commission on account of ill-health. To be Captains: Lieutenants C. W. J. Brasher, W. W. Horton, and H. Smith.

NAVAL MEDICAL COMPASSIONATE FUND.

At the quarterly meeting of the directors of the Naval Medical Compassionate Fund held on April 11th, Surgeon-General G. Welch, R.N., being in the chair, the sum of £60 was distributed among the several applicants.

Obituary.

SIR ALEXANDER RUSSELL SIMPSON, M.D. EDIN., F.R.C.P. EDIN., F.F.P.S. GLASG., D.SC. VICT., LL.D. EDIN., F.R.S.E.,

EMERITUS PROFESSOR OF MIDWIFERY AND DISEASES OF WOMEN AND CHILDREN, UNIVERSITY OF EDINBURGH; CONSULTING PHYSICIAN FOR DISEASES OF WOMEN, ROYAL INFIRMARY, EDINBURGH, ETC.

BY the death of Sir Alexander Russell Simpson another link with the past is gone. His death (as stated in our last issue) in Edinburgh on April 6th, at the age of 80, was the result of a motor-car accident. Born at Bathgate on April 30th, 1835, he was the second son of Mr. Alexander Simpson of that town. After his early education at Bathgate Academy he proceeded to the University of Edinburgh. The system of apprenticeship had not then died out, and he was apprenticed to Professor Goodsir. On Professor Simpson's farewell address at the University in 1905 he gave some reminiscences[1] in which he mentioned that three of his fellow students had been apprenticed similarly to a University professor, and although he had not been helped much, he said, in learning to cure disease, the apprenticeship gave him opportunities that had been a life-long benefit: it had brought him under the spell of a man of genius who was a tireless worker and who sought always what he called "God's truth." Simpson graduated as M.D. Edin. in 1856. He then visited the continent, studying at the Universities of Montpellier and Berlin. It may be mentioned that he was elected President of the Royal Medical Society of Edinburgh while still a student. On returning from the continent he was assistant for seven years to his uncle, Sir James Y. Simpson, who then held the chair of Midwifery in Edinburgh, and whose memory is kept green by his introduction of chloroform as an anæsthetic in 1847. Afterwards he was in practice for five years in Glasgow. This was the period that saw the inception of those vast changes in surgery familiar to all—changes due to Lister's work in conjunction with the use of anæsthesia, which paved the way for the present-day remarkable achievements in all branches of medicine and surgery. Simpson wrote that when he was Syme's dresser he met Lister in Edinburgh, and later in Glasgow, when Lister was professor of surgery there and was making his early experiments in treating compound fractures with carbolised putty in the Glasgow Royal Infirmary. Simpson became F.R.C.P. Edin. and F.F.P.S. Glasg. in 1865. On the death of Sir James Simpson in 1870, he was appointed to the chair of Midwifery, which he held until 1905. He was also physician for diseases of women at the Royal Infirmary, Edinburgh, and to the Royal Maternity and Simpson Memorial Hospital, being consulting physician at the time of his death. He likewise held the post of Dean of the Medical Faculty in Edinburgh.

During the long period of 35 years that Simpson occupied his chair, and notwithstanding the immense advances made, especially in gynæcology, he kept himself abreast even of this department, and was recognised by his colleagues as an able, expert, and successful operator. On his retirement an address was presented to him by students and graduates in the following terms: "You have added so much to the renown of our University in regard to the teaching and advancement of midwifery and gynæcology that, in conjunction with your distinguished predecessor, you have caused the name of Simpson in this department of science to rank worthily alongside that of Monro in anatomy and of Gregory in medicine. This you have achieved not only by your learned contributions to the literature of the subject, containing many and stimulating suggestions, but also by your practice in the perfecting of technique and in the invention and improvement of the instruments of your craft. Your skill as an operator has redounded to the credit of our school, not only at home, but everywhere abroad, and has not merely maintained, but immensely added to, the fame of our Alma Mater."

Sir Alexander Simpson made many contributions to medical literature. He edited Sir James Simpson's "Clinical Lectures on Diseases of Women," and was the author of "Contributions to Obstetrics and Gynæcology." "Axis-

[1] THE LANCET, August 25th, 1905, p. 410.

Traction Forceps," "Cæsarean Hystero-Oöphorectomy," "The Marriage Question from the Standpoint of Gynæcology," "Religio Obstetrici," and many obstetrical and gynæcological memoirs. He received the honour of knighthood in 1906, and was honorary or corresponding Fellow of many foreign societies. He was formerly honorary President of the Glasgow Gynæcological and Obstetrical Society, President of the Royal College of Physicians of Edinburgh, of the Edinburgh Obstetrical Society, and was Fellow of the Royal Society of Edinburgh. He also held the honorary degrees of D.Sc. Vict. and LL.D. Edin. He attended numerous international congresses as the representative of his University, where his unusually good linguistic powers served him well. In addition to his professional activities he was much interested in religious and philanthropic work, giving generously both in time and materially. He took an interest in Evangelistic work in Edinburgh, and especially in the mission movement among students. He married in 1872 Margaret Stewart, daughter of Mr. G. F. Barbour of Bonskeid. Lady Simpson died in 1912. He is survived by one daughter and four sons, one of whom, Dr. G. F. Simpson, is in the medical profession.

With Sir Alexander Simpson there passes from this world, full of years and honours, an earnest Christian, a benevolent and upright man, and one who worthily upheld the best traditions of the profession and the medical school to which he belonged.

We have received from Professor W. Russell, of Edinburgh, the following appreciation of his late colleague:—

"By the death of Sir Alexander Simpson Edinburgh has lost another of the most outstanding members of the medical profession and one of the best known of its citizens. The writer is old enough to remember Dr. Simpson's introduction to the chair vacated by the death of his uncle, Sir James Young Simpson. He remembers something of the feelings prevalent at that time, and, looking back over the years, he still recalls the calm courage, the steadfast eye, and the unshakable patience of the young professor. These qualities he showed right through life, down to the last day he moved amongst us. In the University it must have been the outcome of his faculty for affairs which led to his selection as Dean of the Faculty of Medicine, a post he held for a number of years. It was not, however, until he came to occupy the presidential chair at the Royal College of Physicians that his business capacity and marked fairness of mind became more widely recognised and acknowledged. The stable fairness of mind was combined in an unusual degree with a ready and spontaneous interest in and sympathy with the original work and observations of younger men. Never a fighting partisan his ready and generous recognition of merit and the facility in exactly expressing his understanding of the possible significance of work were sometimes misunderstood. It was not until men learned that he possessed a very wide knowledge of medical science, and was in close acquaintance with its most modern developments, that a truer estimate came to be formed of his character, of his judgment, and of his high mental capacity. Whatever slowness there was in some quarters to estimate him aright was in part at least due to the absence of forceful assertion, and the entire want of the spirit of egotism, of personal seeking of display which characterised him. His quick judgment and his gift of ready and fluent and appropriate expression without display came in due time to be fully understood and appreciated, so that as years passed he received the measure of high esteem and respect which a more assertive character might have commanded earlier. As showing the plasticity of a mind ever sensitive to real forward movement, the profession in Edinburgh was not a little amazed to find the heretofore obstetrician becoming, with the advance of abdominal surgery, a skilful and accomplished operating gynæcologist at an age when many surgeons are supposed to have passed their zenith. And when, having reached a certain age, he decided to lay down his University and hospital work the valedictory address he delivered on graduation day was unanimously recognised as one of the most striking addresses ever delivered on such an occasion. It was only occasionally that his wide erudition and clear and sympathetic thinking so displayed themselves so that all could realise that here was a type of man not of the ordinary medical market-place. When the question is asked what was at the back of all this, what was it that was making and moulding and permeating this man's life and character, the answer is certainly to be found in the extraordinary spirituality of his religious experience. And this side of Sir Alexander Simpson's life was necessarily much in evidence, for it brought him into active participation in all religious, both home and missionary, activities and all philanthropic movements."

Professor Russell concluded his sympathetic appreciation by quoting some passages in which the Rev. Dr. Kelman[2] bore striking testimony to Simpson's spirituality. Reluctantly space compels us to omit all but these eloquent words:—"His home was proverbial for its hospitality. Strangers came to it from many lands, until it seemed to be a home for all the world. ..... His life-long delight in young men kept for him the secret of perpetual youth. ..... They went to him in joy and trouble, in temptation and in shame. Struggling men, broken men, despised men, went and never found him weary or preoccupied. No dullness bored him, no failure estranged him or alienated his compassion or checked his generosity."

ARTHUR EDWARD JAMES BARKER, F.R.C.S. ENG., F.R.C.S. IREL., &C.,

LIEUTENANT-COLONEL, R.A.M.C.; CONSULTING SURGEON TO THE SOUTHERN COMMAND; PROFESSOR OF SURGERY AND CLINICAL SURGERY, UNIVERSITY COLLEGE HOSPITAL.

As we briefly announced last week, Colonel Arthur Edward James Barker died on active service on April 8th, after an attack of acute pneumonia and nephritis.

Mr. Arthur Barker, who was in his sixty-sixth year, was born in Dublin, and was the son of Dr. William Barker of that city. He received his medical education at the school of the Royal College of Surgeons in Ireland and afterwards studied at Bonn University. In 1870 he became a Licentiate of the Royal College of Surgeons in Ireland and five years later a Licentiate of the Royal College of Physicians of Ireland. He took the Fellowship of the Irish Royal College of Surgeons in 1876 and received the English diploma *ad eundem* in 1880. For a time Mr. Barker acted as surgeon at the City of Dublin Hospital, but in 1875, when only 25 years of age, he joined the staff of University College Hospital, London, becoming surgeon in 1885. In 1893 he was appointed Professor of the Principles and Practice of Surgery and of Clinical Surgery at the Medical School attached to the College. He was a consulting surgeon to the Queen Alexandra Military Hospital, Millbank, and to the Osborne Convalescent Home for Officers, and shortly after the outbreak of the war was appointed temporary lieutenant-colonel in the R.A.M.C., serving as consulting surgeon to the Southern Command. He was examiner in surgery to the University of London, and among other appointments which he had held were those of examiner in surgery to the Victoria University, and Hunterian professor in surgery and pathology at the Royal College of Surgeons of England. When the British Medical Association held its seventy-seventh annual meeting at Belfast in 1909 Mr. Barker delivered the address in Surgery—an address marked by optimistic thought and foresight as to the future position of surgery.

His contributions to surgery were numerous and important. In an early investigation into the results of leukoplakia of the tongue he was able to show that in a large proportion of the cases epithelioma of the tongue ultimately developed, and these conclusions were of good effect in drawing attention to the need for early treatment of this condition. When abdominal surgery began to develop, Mr. Barker was one of the pioneers in this country, and the work which he wrote on abdominal operations appeared at a time when little had been written on the subject in the British Isles; and in this connexion we may mention that the first successful gastro-enterostomy for malignant disease of the pylorus in this country was performed by him. This was only the first of a very long series of similar operations successfully performed. In the surgery of the brain he was also much interested, and one case upon which he operated deserves special mention. In this case he removed a bullet from the upper surface of the corpus callosum with complete success, the patient recovering without a symptom from what promised to be a fatal injury. He early devoted attention to spinal anæsthesia, and employed the method very widely; he always administered the anæsthetic himself, and it was very

[2] On the occasion of the memorial and thanksgiving service held in St. George's U.F. Church, Edinburgh, on April 12th.

rare indeed for the anæsthesia to prove in the least unsatisfactory. He was, we believe, the first to use glucose in the injection fluid for spinal anæsthesia, and with this method of anæsthesia he was completely satisfied. Mr. Barker was extremely ingenious and he invented several useful surgical instruments, among which may be specially mentioned the "surgical sewing machine," a device for allowing the surgeon to use a thread of practically unlimited length, without having the need to re-thread the needle; it was mainly intended for use in abdominal surgery, but it could be employed in any region of the body. He was a skilful mechanician, and he always made a model of his inventions himself, and thus they were carefully adjusted for the purpose for which they were intended. He was very careful in the planning and in the carrying out of all operations; he operated deliberately, neatly, and with the most careful attention to details, and it may be mentioned that he preferred linen thread to silk for sutures and ligatures. A short "Manual of Surgical Operations," which he published in 1887, was a valuable acquisition to the records of operative surgery, well written and illustrated in a manner which testified to the author's skill as a draughtsman. He also contributed to Holmes's and Treves's Systems of Surgery and Burghard's System of Operative Surgery, and was the author of numerous papers on surgical subjects to the medical journals.

Dr. Herbert Spencer writes: "I knew Arthur Barker for over 35 years as teacher, colleague, and friend, with increasing admiration as the years went by. During such a long period of friendship the little personal peculiarities of our friends, from which few are free, become neglected; we pay more regard to the sterling value when the surface markings are obliterated, and we are able to appreciate that 'a man's a man for a' that.' Such a man, and a good man, was Arthur Barker. He came to University College Hospital from Ireland at an age when no one can have an extensive or deep knowledge of any branch of medicine. His great merit lies in the fact that he devoted himself with the utmost energy and assiduity to increasing his knowledge until he became one of the most learned and skilful surgeons in this country. During the period of 40 years' work as surgeon to University College Hospital he set an admirable example in the performance of duty, doing an enormous amount of work both by day and night up till the age of 65, when he retired from the active staff. Only one endowed with his magnificent physique could have done this work without exhaustion. I never remember to have seen him tired.

As a teacher he perhaps sometimes spoke a little over the heads of the ordinary student and was apt to dwell on grand, extraordinary, and rare cases. It was the best students and those reading for the higher degrees who appreciated him most. He was rather a teacher of teachers than of students. No one known to me had such a comprehensive knowledge of the literature of new processes and observations in surgery—a fact to be attributed to his excellent knowledge of German and French and to his frequent, at one time yearly, visits to the Congress of German Surgeons. He was thus frequently a year ahead of stay-at-home surgeons in his knowledge of new methods of treatment. If these commended themselves to his judgment he would make trial of them and bring the subject before the profession in a well-written paper which often led to its wide adoption. To him more than to any surgeon in this country is due the use of aseptic dressings and methods and of spinal anæsthesia. He was supremely skilful as an abdominal surgeon—cool, bold, quick, resourceful, with the deftest hands. It was an education to see him suture intestine.

In the charming circle of his family and in familiar conversation over a cigar Barker was at his best. He had then a power of clear and apposite expression, not always evident when he spoke in public, with occasional brilliant flashes of wit, which delighted his friends. I never heard him speak ill of anyone. I have seen a charming letter to a friend written by him on April 1st from a tent on the foothills around Saloniks, in which he said he was well and spoke hopefully of the future. A few days later he was dead. His death came as a grievous surprise to those who knew his splendid constitution and who hoped he had many years of activity in front of him and that his work would receive some recognition from the State. Barker came of a family of soldiers, and it was a fitting and noble ending to a well-spent life for him to die in the service of his country. His work, his school, his pupils, and his friends will keep his memory green."

THE LATE SIR THOMAS BOOR CROSBY.

Dr. R. Hingston Fox writes: "May I supplement your valuable account of Sir Thomas Crosby by a few further notes? He was one of the old habitués of the Hunterian Society, being the senior Fellow on its list at the time of his death, and having acted as Orator in 1871 and President seven years later. His presence at the meetings always brought with it a breath of genial life; his comments were terse and vigorous—he would refer to the 'honourable member' who had just spoken; and whether in these discussions or at the annual dinners, he contributed not a little to the social, friendly, and frank tone for which the gatherings of that society used to be noted, in the days when a city medical community existed. When he began to practise in Fenchurch-street there were still good residences, so he has told me, there and in the neighbouring streets, some with gardens and fountains in them. His friends will remember him especially for his extraordinary fund of vital energy, which has carried him, still in harness, to so advanced an age. To a doctor such a spring of life was a priceless gift, for every patient felt its magnetic force, and many a one was lifted by Crosby's sane and breezy manner out of his despondent mood. The twinkle of humour seldom left his eye; he was in the world to heal, to better, and to extend good fellowship."

At the last meeting of the Court of Common Council of the City Corporation Mr. Mann Cross moved a resolution of condolence with the family of the late Alderman Sir Thomas Boor Crosby, who for nearly 39 years had rendered valuable services to the citizens. Mr. Mann Cross described the deceased alderman as keen, alert, and vigorous both in mind and body, of a bright and optimistic disposition, and respected and beloved by a very large circle of friends. Sir Alfred Newton, as the senior Alderman present, seconded the resolution. He said that in Sir Thomas Crosby they had lost an able and effective magistrate, a man who gave utterance in no unmistakable terms to his convictions, who ever tempered justice with mercy, and whose memory was held in deep reverence by all who knew him. The resolution was carried in silence.

THE LATE DR. J. K. SPENDER.—John Kent Spender, M.D. Lond., M.R.C.S. Eng., L.S.A., who retired in 1895, died at his residence in Bath on April 14th at the age of 87. He was the son of the late Mr. John Cottle Spender, M.R.C.S., of Bath. Dr. J. K. Spender had been surgeon to the Western Dispensary, Bath, from 1855 to 1872 (where he had a large experience in the treatment of syphilis and strongly advocated mercurial treatment) and physician to the Royal Mineral Water Hospital, Bath. He was the author of papers on syphilis in THE LANCET of 1869 and 1874, and of "Therapeutic Means for the Relief of Pain," which was awarded the Fothergill gold medal of the Medical Society of London in 1874. He also wrote "The Bath Thermal Waters, Historical, Social, and Medical," in 1877, and on Rheumatoid Arthritis in 1889. His wife, who died many years ago, was well known as a writer, and one of his sons is Mr. J. A. Spender, the editor of the *Westminster Gazette*.

BEQUESTS TO BRIGHTON CHARITIES.—By the will of the late Miss Elizabeth Simpkins, of Brighton, the testatrix left £5000 to the Sussex County Hospital; £1000 each to the Royal Alexandra Hospital for Children, the Brighton and Hove Branch of the Surgical Aid Society, the Throat and Ear Hospital, the Eye Hospital, the Asylum for the Blind, and the Asylum for Deaf and Dumb Children; and £500 to the Crèche in Eastern-road.

THE ROYAL SANITARY INSTITUTE.—A conference on Sanitary Administration under War Conditions will be held in London on June 9th and 10th. On June 9th, at 10.30, the conference will be opened by the Lord Mayor of London. A discussion on "The Maintenance of the Standard of Municipal Sanitation during the Continuance of War Conditions" will be opened by Mr. H. Percy Boulnois, M.Inst C.E., and Dr. James Wheatley (Shrewsbury). The chair will be taken by the Mayor of Westminster. On June 10th a discussion will be opened on "The Mental Deficiency Act from the Social and Educational Standpoint" by Dr. A. B. Ritchie (Manchester). The chair will be taken by Mr. Leslie Scott, K.C., M.P. At 3 P.M. each day visits will be made to various undertakings. A lecture to the Institute on "The Economics of Food-supply in War Time," by Dr. Augustus Waller, F.R.S., will be given on May 3rd at 5.30 P.M. Lieutenant-Colonel Sir Shirley Murphy, F.R.C.S., R.A.M.C., will occupy the chair.

Correspondence.

"Audi alteram partem."

THE STUDY OF APPLIED PSYCHOLOGY.

To the Editor of THE LANCET.

SIR,—During the last few months several papers on the psychology of shell shock and cognate conditions have been published in your columns. One striking feature is the attraction which such problems have for a wider intellectual circle than the professed psychologist or psychiatrist, a fact which is well exemplified by the case of the distinguished anatomist, Professor Elliot Smith, whose contribution to THE LANCET emphasises not only the interest but the profound importance, both social and individual, of the topic which he deals with. Your leading article of April 15th contrasts the admirable paper of Dr. Bernard Hart on the psychology of rumour with the spiritualistic fantasies of M. Maeterlinck, which are rightly censured, though with regret at the degradation of a great poetic genius. Two books, one by Sir Martin Conway, the other by a well-known surgeon, Mr. Wilfred Trotter, have recently been published on the psychology of the crowd.

The newspapers teem with material of surpassing interest to the psychologist. There we see the peace-bred politician, accustomed to be passively impelled along his victorious path by the united opinions of a great party, now confronted with the mandate to lead, a rôle which his education and experience render him singularly unfitted to fill. We see the permanent official, inured to routine and a wholesome dread of responsibility, suddenly called upon to reorganise his department on new lines and to expand it to meet the urgent requirements of a critical situation, a task which he has never contemplated and is usually little adapted to. We see the multitudinous critics, accustomed to the apparent freedom of individual thought which is the offspring of a democratic environment, voicing their panaceas in the press with little result but to make confusion worse confounded. Even our scientific experts, Fellows of the Royal Society though they may be, are so narrowed by the cramping influences of lives passed in the laboratory and class-room that they show a lamentable inability to realise the broader aspects of the struggle, and, above all, fail to do justice to the practical problems which it has been their habit to view with Olympian indifference. Every one babbles of causes and effects with a logical accuracy which is only stultified by false premises. In spite of the proved failure of the theorists of the French Revolution and after —Rousseau, the Utilitarians, and *hoc genus omne*—and because of the growth and predominance of rationalism and its many favourable and advantageous results, we are more than ever convinced that man differs from the lower animals in being endowed with reasoning faculties and works out his salvation by them.

Yet we are equally convinced that not only our bodies but our minds have evolved from those of lower species, and that even the individual in some modified manner recapitulates his phylogenetic history in his own development. Comparative psychologists like Professor Lloyd Morgan have done much to elucidate the mentality of lower animals and the parts played by instinct and intelligence. Genetic psychologists like Professor Mark Baldwin, whose escape from a dastardly death at the hands of the Germans we all rejoice in, show how great a part instinct, modified indeed but clearly recognisable, plays in the mentality of the child. Social psychologists like Professor William McDougall further demonstrate how instinct permeates and pervades life from the cradle to the grave. Anthropological psychologists like Durkheim and his school, and especially Lévy-Bruhl, emphasise the corporate mentality of primitive races, its emotional responses, its "prelogical" indifference to incompatibles, and, above all, its predominant group-unity. The evolution of the individual mind and its gradually increasing segregation from the communal mind has yet to be traced down the course of the ages. When that is done we shall have attained a scientific psychology of history which will replace the speculative philosophies of history, which are the natural outcome of transcendental philosophy. Thus shall we lead up by slow but sure progress to a really scientific comprehension of the motives, and therefore of the actions of individuals in their social relations. Psychology, after centuries of sterile individualistic introspection, has at last become a practical science, with all knowledge for its realm. Sooner or later its teachings must be recognised as the only sure foundation for education in all its branches. By it alone can any truly scientific guidance be given to democratic thought and action.

This long preamble is a brief and inadequate review of some of the reasons why I think the time is ripe for the formation of a society to deal with the innumerable problems of what may be called applied psychology. Why do I ask you, Sir, to ventilate this suggestion? First, because I think that scientific psychology must be founded on physiology, and that those who have been well trained in physiology and neurology must be the guiding spirits of any such enterprise. Second, because morbid psychology has advanced farther along the practical lines of an applied psychology than any other branch of the subject. Third, because the problems of this nature which the war has so strikingly brought to light have revealed the widespread interest in the subject as well as, to many people, the inadequacy of the methods available for dealing with them. Fourth, because I think this is the best way to obviate the greatest danger which such a society would be confronted with—viz., over-popularity. It would be fatally easy for it to degenerate into a medium for pseudoscientists, faddists, and fanatics. Already scientific eugenics has had reason to pray to be saved from some of its friends. To avoid such a disaster I think (1) that the society must be run on oligarchical lines—the council must have complete control; and (2) that at least half of the council must consist of professional psychologists and psychiatrists of established reputation, the remainder representing other interests. It would be easy to enumerate specially qualified anthropologists, classical scholars, historians, and so on. To avoid the dangers of too autocratic a government I would advocate a large committee on the above lines, with a small executive subcommittee. Such a society holds out an alluring prospect of useful work in many spheres of public endeavour. The argument that the present time is little suited for embarking upon a project of this nature is worthy of deferential consideration, but I would submit that there are obvious reasons why it would be wise to coördinate the discussions of the many problems which the war has exhibited in an acute form. The universal cry of the moment is for organisation of effort. Doubtless we shall muddle through now as of yore, but we are no longer content to muddle on indefinitely. Now is the time to lay the foundations of future organisation, and I would point out that the organisation of a democracy like ours is a far slower, subtler, and more complicated task than the organisation of a pack of wolves (like the Germans) or a flock of sheep.—I am, Sir, yours faithfully,

J. HERBERT PARSONS.

Queen Anne-street, W., April 15th, 1916.

INFLUENCE OF FEBRILE CONDITIONS ON INOCULATION AGGLUTININS.

To the Editor of THE LANCET.

SIR,—In recent articles Professor G. Dreyer and his co-workers have commented adversely on certain methods in common use for measuring agglutination and also on certain results obtained in persons inoculated with B. typhosus. I should like to refer to three of these questions —(1) the value of the microscopic method; (2) the effect of febrile conditions on inoculation agglutinins; and (3) the comparative value of a positive reaction to B. typhosus in inoculated and non-inoculated persons.

1. The value of the microscopic method. Dr. E. W. Ainley Walker in THE LANCET of Jan. 1st argues that this method is unreliable. None of his reasons applies specially to the microscopic method, and every argument he advances applies equally to the macroscopic or any other method which involves the use of living cultures. Bacteriologists are quite aware of these difficulties, and have to be constantly on the look out to avoid them, and whatever their importance in theory, in practice undoubtedly they are avoided. These methods, microscopic, macroscopic, and mixed, have been in use for many years, and their results are confirmed by the diagnosis of clinicians and by post-mortem examination. If Dr. Walker wishes us to believe

that these results have been grossly fallacious, as he apparently does, he will find little evidence to support him and few to follow him. Without doubt the difficulties with typhoid cultures do exist, although they can be avoided, and if Professor Dreyer can give us a standard culture it will be a great boon. Unfortunately, Professor Dreyer and his colleagues have thrown together two entirely independent questions, the advocacy of the use of killed cultures and the advocacy of a certain technique. The killed typhoid suspension sent to me could not have contained more than 200–300 million bacilli per c.c., and was thus too thin for use except presumably by his own technique. If Professor Dreyer would provide killed suspensions containing 1500–2000 million per c.c., I am sure he would find their use would receive a full and sympathetic trial.

2. The effect of febrile conditions on inoculation agglutinins. Some time ago the writer made the suggestion that agglutinins resulting from typhoid inoculation are markedly diminished or removed by febrile conditions, in which a temperature of 102° F. is present for at least four days. Professor Dreyer, Dr. A. G. Gibson, and Dr. Walker very emphatically deny this in THE LANCET of April 8th, and in support of their views give tables of the results obtained in series of cases of paratyphoid A, paratyphoid B, and "other febrile conditions." In order to ascertain whether these series show any diminution of agglutinins as the result of the febrile attack, the number of Dreyer's "standard agglutination units" present must be compared with the number found by the same method in healthy inoculated persons. The latter figures are given by Professor Dreyer and Dr. A. C. Inman in THE LANCET of July 31st, 1915. The mean number of typhoid agglutination units present in each case in the various series is as follows:—

Normal typhoid inoculated persons	225 typhoid agglutination units.
Paratyphoid A occurring in typhoid inoculated persons ...	37 typhoid agglutination units.
Paratyphoid B occurring in typhoid inoculated persons ..	150 typhoid agglutination units.
Other febrile conditions occurring in typhoid inoculated persons	78 typhoid agglutination units.

A standard of comparison suggested by Professor Dreyer, Dr. Gibson, and Dr. Walker is the percentage of cases in each series in which at least 25 typhoid agglutination units are present. In comparison with the normal inoculated persons, the results are:—

Normal typhoid inoculated persons	100 per cent contain 25 units.
Paratyphoid A occurring in typhoid inoculated persons ...	57·1 per cent. contain 25 units.
Paratyphoid B occurring in typhoid inoculated persons ...	81·9 per cent. contain 25 units.
Other febrile conditions occurring in typhoid inoculated persons	54·5 per cent. contain 25 units.

The tables may be compared in various ways with the same result. There is always a marked diminution of agglutination in patients who have passed through a febrile attack. Some other tables previously published by Professor Dreyer and Dr. J. A. Torrens are also reproduced in this article. There is no statement either of the number of units or whether the agglutination referred to is "standard agglutination" and therefore it is not possible to compare them with other tables, but it is evident that the febrile cases have distinctly less agglutinin than the normal inoculated persons. Thus a consideration of the results published by Professor Dreyer and his colleagues strongly supports the suggestion that the passage through a febrile attack markedly diminishes the amount of typhoid inoculation agglutinins.

3. The comparative value of a positive typhoid agglutination reaction in inoculated and non-inoculated persons. The suggestion made by the writer was that a febrile attack of 102° F. for at least four days so far reduces the inoculation agglutinins that if subsequently the typhoid agglutinins reach the standard which would be regarded as positive in a non-inoculated person, the reaction should be regarded as positive even in an inoculated person. It is obvious that if such an attack does produce this reduction, the second hypothesis is almost a necessary sequel, and it has been shown that the figures published by Dreyer strongly support the primary suggestion. Of 102 cases of paratyphoid, &c., in Dreyer's tables which had passed through febrile attacks, only 13 showed more than 100 "agglutination units." It is not unreasonable to ascribe 8 of these to co-agglutinins. Thus there remains 5 per cent. of cases after febrile attacks in which the presence of 100 units may be due to inoculation. (It may be mentioned that this amount is present in 58 per cent. of normal inoculated persons in Professor Dreyer and Dr. Inman's tables.) This number of 100 units apparently corresponds to a "positive" reaction in non-inoculated persons. It is evident that there is nothing in these figures to controvert the view that after an inoculated person has passed through a febrile attack the value of a positive typhoid reaction is but little less than in a non-inoculated person.

The primary suggestion on which this view was based is that a febrile attack of 102° F. for at least four days markedly diminishes the inoculation agglutinins, and this conclusion is strongly supported by all the results recorded by Professor Dreyer and his colleagues, although their figures were published expressly to refute the suggestion.

I am, Sir, yours faithfully,

Greywell, Bursledon, Hants, April 13th, 1916. H. L. TIDY.

TREATMENT OF HÆMORRHOIDS BY INJECTION.

To the Editor of THE LANCET.

SIR,—Whilst feeling greatly flattered by Mr. Swinford Edwards's kindly reference to myself in his article on this subject in THE LANCET of April 15th, I cannot agree with him in his reasons for objecting to the use of the speculum for the little operation, nor with his choice of cases for the method. I make it an invariable rule in every rectal case to use the speculum, because it is only in this way that most rectal lesions can be accurately diagnosed. There are numerous cases of hæmorrhoids in which bleeding, pruritus, or other troublesome symptoms exist, but in which the piles rarely or never prolapse and cannot be made to do so. Hæmorrhoids cannot be felt even by the most highly trained finger. There is only one way to diagnose them, and that is by seeing them. If they are large and prolapse readily this is easy; but in the majority of cases the only way of seeing them is to pass a speculum. Nearly every patient with a rectal lesion diagnoses it himself as "piles," but nobody knows better than Mr. Edwards in what a large proportion of cases that diagnosis is incorrect or incomplete. Naturally before treatment is started a complete diagnosis is necessary, and thus the possession of a rectal speculum is a *sine qua non* to anyone treating a rectal case. Since Mr. Edwards only injects piles that can be protruded either naturally or after an enema, and condemns all other cases to a continual use of "local applications, enemata, attention to diet, and regulation of the bowels, &c.," he deprives by far the larger class of patients of the benefits of the injection method, and reserves it for the worst cases, in which its success is least certain. Moreover, the use of an enema is a very awkward complication in private practice, and practically prevents the use of the method at the surgeon's consulting-room, whilst it would be a very troublesome addition to the treatment at an outpatient department, where numerous cases have to be dealt with in a limited time,—I often inject a dozen or more cases in an afternoon. Contrary to Mr. Edwards's expectation, I never need an assistant, though I always use a speculum; were I to use an enema, however, the assistance of a nurse, both at hospital and in private, would seem to be essential. Nor have I had any trouble from hæmorrhage, which never exceeds a few drops that can be readily soaked up with a single swab. Mr. Edwards seems to get much more bleeding by injecting piles outside the anus, and this is a serious drawback to his method. I find it quite easy to inject the fluid into the centre of each pile, or into its base, and I can easily reach high-lying piles by means of the speculum—piles which, though large, are unlikely to come down outside the anus.

I think it necessary to emphasise these points, because Mr. Edwards would restrict the cases he thinks suited to injection to the more severe ones, and it is especially in the milder ones, which he condemns to palliative treatment, that I have found injection most useful. Our difference in technique accounts, I think, for our difference in practice.

I am, Sir, yours faithfully,

Gordon-square, W.C., April 17th, 1916. ARTHUR S. MORLEY.

TREATMENT OF HÆMORRHOIDS.

To the Editor of THE LANCET.

SIR,—I have read with much interest Mr. Swinford Edwards's paper in THE LANCET last week on the treatment of piles by injection. When I was house surgeon at St. Mark's Hospital I had the privilege of seeing him carry out this plan, and my opinion is favourable to the procedure. I agree with him that experience tells. Many a good treatment receives adverse comment, and patients suffer needless pain, at the hands of those who will not learn correct practical details to assist them in diagnosis or technique.

I am, Sir, yours faithfully,

Bournemouth, April 17th, 1916. W. J. MIDELTON.

ENTERIC AND TYPHOID: A POINT IN NOMENCLATURE.

To the Editor of THE LANCET.

SIR,—In reference to Dr. E. W. Goodall's letter on this subject in your issue of April 15th, may I mention that the arrangement which he suggests had already been adopted by the Committee of the Nomenclature and Classification of Diseases, Royal College of Physicians? The entry of enteric fever in the section "Diseases caused by Infection," as revised by the committee, now stands as follows:—"Enteric fever:—Varieties: (*a*) Typhoid fever, (*b*) paratyphoid fever." The organisms concerned in the causation of the different varieties of enteric fever will be found in the list of vegetable parasites.

It is hoped that the 1916 edition of the Nomenclature and Classification of Diseases will shortly be in the press.

I am, Sir, yours faithfully,

LEONARD GUTHRIE,
Honorary Secretary, Nomenclature of Diseases Committee, Royal College of Physicians of London.

Upper Berkeley-street, W., April 17th, 1916.

UREASE.

To the Editor of THE LANCET.

SIR,—In the account of the meeting of the Royal Academy of Medicine in Ireland given in THE LANCET of April 8th (p. 781), Dr. W. G. Smith is reported to have said that in the estimation of urea the most accurate method is by urease. Will any of your readers kindly inform me what is the technique and where urease can be obtained?—I am, Sir, yours faithfully,

Belfast, April 11th, 1916. RICHARD PURDON.

*** Our correspondent will find a clear account of the technique in Mr. R. H. A. Plimmer's "Practical Organic Chemistry" (Longmans, Green, and Co., 1915 edition). The enzyme urease need not be used separated from the soya bean. A little pinch of the soya bean powder suffices, and the soya bean is not difficult to procure.—ED. L.

ANÆSTHESIA FOR ENUCLEATION OF TONSILS.

To the Editor of THE LANCET.

SIR,—Dr. Hugh R. Phillips, in your issue of April 15th, rather misses the point of my article when he sums it up in the statement that I "advocate the use of ether" for enucleation of tonsils. I advocate the use of some ether during the induction. What I was seeking to enforce is that (1) a very deep degree of narcosis is necessary; (2) some ether is desirable in attaining this; (3) anæsthesia in these cases requires skill and experience to produce; and (4) the anæsthesia is maintained by chloroform.

I am, Sir, yours faithfully,

Harley-street, W., April 15th, 1916. J. BLOMFIELD.

NATIONAL ASSOCIATION FOR THE PREVENTION OF INFANT MORTALITY.—A special course of lectures on Infant Care for Nurses and Midwives will be held from May 8th to June 23rd, from 3 to 4 P.M., on Mondays, at 1, Wimpole-street, London, W., and on Fridays, at 3, Vere-street, W. Particulars may be obtained from the Secretary, 4, Tavistock-square, London, W.C. Medical practitioners and students may attend.

The War.

THE CASUALTY LIST.

THE following names of medical officers appear among the casualties announced since our last issue:—

Died of Wounds.

Lieutenant M. E. Ball, R.A.M.C., attached to the Worcestershire Regiment, was a student at Guy's Hospital, qualifying in 1909, and was in practice at Emsworth, Hants, before joining the R.A.M.C. in September, 1915.

Wounded.

Lieutenant J. Coutts, R.A.M.C.

Lieutenant J. M. MacKenzie, R.A.M.C., attached to the Northumberland Fusiliers.

Lieutenant M. G. Pettigrew, R.A.M.C., attached to the Welsh Regiment.

Lieutenant R. R. Pirrie, R.A.M.C., attached to the Northumberland Fusiliers.

Captain H. W. Greig, R.A.M.C.

Lieutenant M. G. MacDonald, R.A.M.C., attached to the Royal Warwick Regiment.

Captain J. McKerchar, R.A.M.C., attached to the Somerset Light Infantry.

DEATHS AMONG THE SONS OF MEDICAL MEN.

The following sons of medical men must be added to our lists of those who have fallen during the war:—

Captain S. Powell, Royal Welsh Fusiliers, youngest son of Sir R. Douglas Powell, Bart., K.C.V.O., M.D.

Lieutenant W. M. Dobie, Royal West Kent Regiment, son of Dr. H. Dobie, of Chester.

Captain H. B. Dobson, Worcestershire Regiment, third son of Mr. N. C. Dobson, F.R.C.S., of Clifton, Bristol.

Sergeant H. W. Welstead, Canadian Expeditionary Force, third son of Dr. F. Welstead, of West Dulwich, Surrey.

Captain G. Y. Gross, Royal West Kent Regiment, second son of the late Mr. C. Gross, F.R.C.S., of Westbourne-grove, London.

THE HONOURS LIST.

For distinguished service and devotion to duty at the camp at Wittenberg, Germany, during the typhus epidemic from February to June, 1915, the following honours have been conferred:—

To be C.M.G.: Major H. E. Priestley, R.A.M.C.

D.S.O.: Captain A. C. Vidal, R.A.M.C., and Temporary Captain J. La F. Lauder, R.A.M.C.

The following promotions and appointments of medical men in connexion with Indian Army Services are announced:—

To be C.B., Military Division.—Colonel H. M. Adamson; Lieutenant-Colonel J. F. Donegan, R.A.M.C.

To be Brevet-Colonel.—Lieutenant-Colonel E. Jennings, I.M.S.

To be Brevet-Lieutenant-Colonel.—Major S. Anderson, I.M.S.

Distinguished Service Order.—Captain P. B. Bharucha, I.M.S.

Military Cross.—Captain R. C. Clifford, I.M.S.; Captain F. A. Robinson, R.A.M.C.; Lieutenant F. T. Simpson, R.A.M.C.

COMPULSORY MILITARY SERVICE.

It is possible that before the publication of THE LANCET this week the country will know the decision that has been come to in Parliament on the question of compulsory military service. In respect of the various political considerations that have obscured the question a medical journal has nothing to say; they have had their origin to some extent in the progress of the war, and only a foresight that would have amounted to prophesy could have obviated the difficulties that have arisen. As far as the medical profession is concerned, it seems almost beyond doubt that a general demand upon the medical profession at the beginning of the war would have yielded a more equitable result than that which has now been

obtained through the self-sacrifice and patriotism of large numbers of individual practitioners. If the whole material had been available from the beginning, levies could have been made from it that would have been more fair to the constituency as a whole, while the risk of the dangerous depletion of civil practitioners in particular localities would have been avoided. The men most suited for the work and most easily spared from their civil duties could in this way have been employed, and to some extent employed in places congenial to their capacities. We do not deduce from this that compulsory military service for the population is now necessary—all arguments from the particular to the general are dangerous—but it seems to us a fact that a measure of compulsion earlier in the war would have had the same good outcome for the whole population of the country that it would have had for the medical profession.

THE HORRORS OF WITTENBERG CAMP.

Sir WILLIAM MILLIGAN writes as follows concerning Wittenberg Camp:—

The horrible and ghastly tale of the inhuman conduct of Dr. Aschenbach, the medical officer in charge of the Wittenberg prisoners of war camp, as reported by the Government Committee on the Treatment by the Enemy of British Prisoners of War, is only one more illustration of the infamous effects of German Kultur (!). I doubt if the medical profession of any country in the world could produce such a specimen of depravity as this inhuman beast, the medical commandant to whom the Kaiser has presented the Iron Cross as a reward for the perpetration of systematised murder on a colossal scale.

It is time, Sir, that the medical profession in this country raised its voice in abhorrence and in condemnation of the conduct of a confrère who, trusted with the care of suffering and defenceless prisoners of war, so betrays his trust as to be capable of such cowardly and devilish barbarity as this traitor to our profession.

"Man's inhumanity to man
Makes countless thousands mourn."

To mark the feelings of indignation and disgust shared by the medical profession of the British Empire I beg to suggest that the Councils of the various Sections of the Royal Society of Medicine forthwith delete from their list of Honorary or Corresponding Members the name of any German physician, surgeon, or specialist, who may have in our hour of illusion and delusion been accorded this honour.

I may say that I have given notice of a resolution on these lines to the secretary of the Laryngological Section and of the Otological Section of the Royal Society of Medicine for discussion at the first possible opportunity.

EMERGENCY MILITARY HOSPITALS.

At the Royal Sanitary Institute last week, Mr. A. Saxon Snell, F.R.I.B.A., repeated, with new points and illustrations as a Chadwick lecture, an address on the same lines as one delivered before the Royal Society of Medicine on Nov. 10th, 1915 (THE LANCET, vol. ii., 1915, p. 1164). He showed that the many lessons to be afforded by the construction of temporary military hospitals, and the conversion of private houses into places suitable for the care of the sick and wounded during the war will inevitably affect the design and cost of hospitals, both temporary and permanent, when we return to normal times, and Mr. Snell's summary of what has been already done to meet present conditions will prove highly valuable in the future. The important factors in good hospital construction are sunlight, fresh air, and cleanliness, and these factors, he pointed out, were particularly necessary in temporary structures, as they compensated for the lack of finish to the floors and surfaces of the buildings, permitting of the accumulation of dust and perhaps promoting germ growth. Fresh air he estimated as more important than heat, and its beneficial effects were well observed in the Crimean War, where the mortality among the wounded treated in places exposed to the open air was considerably lower than that among those treated in closed buildings. Similar lessons, Mr. Snell said, were gained by surgeons in the American War and in the Franco-Prussian War. Open-air treatment he admitted to have one serious disadvantage: the staff may be unfavourably affected thereby, or at any rate rendered very uncomfortable. But the experiences of Dr. Philip Boobbyer, medical officer of health of Nottingham, have shown that nurses can be trained to work in the open-air ward, and in the end may come to prefer that kind of ward to any other. In an open ward fires, he said, were necessary, even though they were not numerous and had no effect in heating the building; while they gave an appearance of comfort they were necessary so that nurses should have some means of warming their hands before applying dressings, and some handy place for raising the temperature of any small article of food. It was quite possible, in Mr. Snell's opinion, to build comfortable and efficient buildings at a small cost, but in wards for the reception of fever patients and infectious cases, even in temporary buildings, it was necessary to use those devices which were designed to promote cleanliness and prevent germ growth such as rounded angles and glazed walls. The same thing applied to operating theatres. It might be argued that if a hospital such as the 1st Eastern General Hospital at Cambridge could be built for £20 per bed it would be reckless extravagance to pay £150 per bed; but such a question would not be raised by those who understood hospital needs in times of peace. Discussing the question of what was necessary in the construction of permanent hospitals in the future, the lecturer said that one of the first things to be done would be a modification of the building by-laws. Hospital fittings that were not absolutely necessary would have to be rejected. Cement could be used in place of tiles, but little saving could be effected in metal fittings, as they were the most durable and economical. Heating apparatus might be dispensed with, but means must be provided for efficient ventilation. The lecture was illustrated by an interesting series of plans and views of military hospitals throughout the country. In one case the serious defect of not providing escape in case of fire was pointed out, and in another a proposal that there should be five rows of beds in a ward was severely criticised. A view of the Moabite Hospital in Berlin, which was erected as a temporary hospital some 40 years ago, and which is still standing, was thrown upon the screen.

THE BATH WAR HOSPITAL.—The Bath War Hospital was opened for inspection recently. It is situated in Coombe Park, Weston, and will provide accommodation for 500 wounded soldiers. The hospital has been erected by the War Office, but about £10,000 is being raised in Bath for the provision of accessories, and when patients arrive comforts will be provided for them by voluntary organisation. Dr. G. A. Bannatyne, of Bath, who holds the temporary rank of Lieutenant-Colonel, is the Commandant, and each of the ten wards will have a local surgeon.

THE Order of the White Eagle has been conferred upon Dr. Elsie Inglis, Commissioner of the Scottish Women's Hospitals for Foreign Service, by the Crown Prince of Serbia.

Medical News.

ROYAL COLLEGES OF PHYSICIANS OF LONDON AND SURGEONS OF ENGLAND.—At the quarterly examination in Practical Pharmacy held on April 6th and 7th the following candidates were approved:—

Abdul Majid Ahmad, Cambridge University and Guy's Hospital; Fritz Ernest Bendix, Middlesex Hospital; Ingram Richard Rhodes Brogden, Cambridge University and Guy's Hospital; Gordon Ernest Burton, Cambridge University and St. Bartholomew's Hospital; Henry Alexis Chodak, St. Andrews University and London Hospital; Alfred Beresford Dummere, London Hospital; John Reginald Keith Fenning, London Hospital and private study; Gerald Hartas FitzGerald, Guy's Hospital; Frederick Christopher Ashley Frith, Bristol University; Theodore Hamnet Gunewardene, Ceylon Medical College and King's College Hospital; Newcome Herbert Harrison, Charina Cross Hospital; Sidney Gilbert Harrison, St. Bartholomew's Hospital; Walter Sebastian Herman, London Hospital; Douglas Leonard Lees, Bristol University; Herman Siegfried Nicolaas Menko, London Hospital; Frederick Maurice Moseley, Cambridge University and London Hospital; William Percival Nelson, Birmingham University; Arthur Leslie Packham, Middlesex Hospital; David Forsyth Panton, London Hospital; Warre Harriott Alexander Pratt, Guy's Hospital; John Sturges Ranson, Westminster Hospital; Cecil Nuttall Ratcliffe, Liverpool University; Johannes Jacobus Redelinghuys, University College and private study; Florence Mildred Rhodes, Royal Free Hospital; Alan Harvey Richardson, St. Thomas's Hospital; Norman Fairbank Smith and Cecil Henry Terry, Oxford University and St. Bartholomew's Hospital;

William James Walters, Cambridge University and Guy's Hospital; Hugh Pennefather Warren, London Hospital; Idwal Glynne Williams, St. Bartholomew's Hospital; Sidney Winnick, London Hospital; Geoffrey Winter, Birmingham University; Samuel Anthony Withers, Guy's Hospital; and Alfred Frank Wyatt, London Hospital.

UNIVERSITY OF GLASGOW.—The following candidates have passed the examination for the degrees of Bachelor of Medicine (M.B.) and Bachelor of Surgery (Ch.B.) in the subjects indicated—B., botany; Z., zoology; P., physics; C., chemistry:—

Alan Percy Agnew (Z., C.), Alexander Gardner Aitken (Z., C.), William Simpson Aitken (Z., C.), Daniel Edwin Alley (B.), Angus Alistair Bain (Z., C.), Alexander Baird (Z.), Adam Barr (Z.), Alexander Mitchell Beaton (Z.), Alexander Ronald Black (P.), John Thomas Blundell (Z.), Gavin Haddow Boyd (Z., C.), Alexander Orr Bruce (Z.), George Frederic Cables (Z.), Stewart Caldwell (Z., C.), Patrick Anderson Carrie (Z., C.), Alexander Chisholm (Z., C.), Douglas Hugh Clutterbuck (C.), Horace Collingbourne (C.), Archibald Robson Cook (B., Z., C.), William Davie (Z.), James Dawson (Z., C.), Joseph Dewar (Z.), Alexander Smith Dick (Z.), James Millar Duff (Z.), William Norman Duguid (Z.), Thomas Fletcher (Z., C.), John Cochrane Forsyth (Z., C.), Bruce Paterson Gardner (B., C.), Thomas Gibson (Z., C.), Robert Dick Gillespie (Z., C.), Charles Glen (Z., C.), George Garlach Graham (C.), Alexander Gray (Z., C.), James Lorimer Halliday (Z., C.), David Russell Hamilton (Z., C.), William Mason Hamilton (P.), David Henderson (Z., C.), Wesley Cope Holdsworth (Z., C.), Walter Houston (Z., C.), Alexander Deans Humble (B., P.), Jacob Hurwich (Z., C.), George Jamieson (C.), Lennox Matthew Johnston (Z., C.), William Livingstone Kennedy (Z., C.), David Alison Ker (Z., C.), William Patrick David Kerr (Z., C.), James Cowan Kirkwood (Z., C.), Daniel Lamont (Z., C.), John Lavelle (Z.), Alexander Logan, M.A. (B.), Alexander Lennox M'Adam (Z., C.), George M'Alpine (B., P., C.), George Hutton Macartney (Z., C.), Henry John M'Bride (Z., C.), Malcolm M'Neil M'Bride (B., P.), William Martin M'Cash (Z., C.), Alexander Mitchell M'Clure (Z., C.), James M'Court (B.), Robert M'Courtney (B.), Duncan Macdiarmid (Z., C.), James Macdonald (Z., C.), Thomas Simpson MacDonald (Z., C.), John M'Dougall (Z., C.), James Maclarlane (Airdrie) (Z., C.), Thomas John M'Kail (Z., C.), William M'Kendrick (Z., C.), Stewart Reid M'Kim (B., Z.), Oswald Thomas Maclaren (Z., C.), James M'Nair (Z., C.), Joseph Craig M'Naught (Z., C.), Roderick Montague Macpherson (Z., C.), Matthew Findlay Guthrie Main (Z.), Abraham Markson (Z., C.), Edin Ernest Miller (Z., C.), John Malcolm Lamont Mitchell (Z., C.), George William Murray (Z., C.), James Nairne (Z., C.), James Paton Neilson (C.), Malcolm Nicolson (Z., C.), George Strachan Park Noble (Z.), Archibald Little Orr (Z., C.), Thomas Core Porter (C.), Alexander Hunter Rankin (Z., C.), Peter Crawford Rankin (P.), James Reid (Z., C.), Joseph Francis Reilly (Z., C.), Cyril Gladstone Richards (Z.), Joseph Sachs (Z., C.), Wilfrid Henry Scott (Z., C.), Henry Edmund Seller (Z., C.), Herbert James Sheppard (Z., C.), Archibald Gordon Smith (Z., C.), David Croydon Smith (Z., C.), Andrew Snaddon (Z., C.), James Sneddon (C.), Francis Cyril Speechly (C.), Archibald Vernon Steen (Z., C.), Donald Stewart (B.), Donald Stewart (Z., C.), John M'Laughland Strang (Z., C.), William David Sutherland (Z., C.), Alexander Symon (Z., C.), Andrew Smith Taylor (Z.), Charles Noel Temple (Z.), William Lees Templeton (Z., C.), James Nisbet Tennent (Z., C.), David Wolfe Tobias (Z., C.), George Tudhope (Z., C.), John Walker Walker (B., P.), James Dunlop Whiteford (C.), Charles Edwin Whittet (Z., C.), Peter Andrew Wilson, M.A. (C.), William Wilson (Z., C.), John Wingate (Z., C.), John Wyllie, M.A. (Z., C.), and John Yule (Z., C.).

Women.—Annie May Alexander (Z.), Marion Bell Armstrong (Z., C.), Mary Baird (Z., C.), Margaret Bennett, M.A. (Z., C.), Elizabeth Margaret V. H. B. Bird (Z., C.), Margaret Watson Blackwood (Z., C.), Agnes Leggatt Duncan Bradford (Z., C.), Susan Struthers Bryce (C.), Lilias Elizabeth Barr Buchanan (Z.), Annie Burns Cameron (P., C.), Edith Chalmers (C.), Ellen Bell Cowan (Z.), Edith Margaret Davidson (Z.), Simone Denil (Z., C.), Isabella Gibson Dunlop (B.), Elsie Florence Farquharson, M.A. (Z., C.), Elizabeth Jardine Findlay (Z., C.), Christian Melville Fleming (Z., C.), Margaret Elizabeth Gibson (Z.), Muriel May Gilmour (Z., C.), Agnes Scott Glover (Z., C.), Mabel Scott Goudie (B., Z.), Mary Burns Grant (Z., C.), Christina Gray (Z., C.), Brünnhilde Mary Grieve (Z., C.), Agnes Brownlie Hart (Z.), Marion Pitcairn Hogg (B., P.), Isabel Edgar Russell Jeffrey (C.), Margaret Longwill Johnston (Z., C.), Jane Carrick MacDonald (Z., C.), Mary Johnston Macfarlane (Z., C.), Annie Isabel Christine Maclardy (C.), Alexandrena Miller Maclennan (Z., C.), Marie Josephine M'Naught (C.), Muriel Mary M'Walter (C.), Janet Dick Montgomery (Z., C.), Effie Niblock (Z., C.), Alice Janet Paton (B.), Joanna Thomson Rae (Z., C.), Isobel Reid (Z.), Kathleen Eleanor Hyde Rutherford (Z., C.), Mary Russell (Z., C.), Marguerite Linck Sclanders (Z., C.), Margaret Dorothy Lightbody Service (Z., C.), Catriona Sinclair (Z., P.), Elizabeth Helen May Slimmon (Z., C.), Alexandra Walker Smyllie, M.A. (Z., C.), Jane Edgar Stewart (Z., P., C.), Christina Smith Stoddart (Z., C.), Margaret Mavor Stuart (Z.), Dorothy Mary Summers (Z.), Helen Bruce Sutherland (Z., C.), Margaret Young Turnbull (Z.), Mary Carswell Walker (Z., C.), Mary Lyle Wilson (Z., C.), Helen Frances Wingate (Z., C.), and Agnes Hart More Young (Z., C.).

The following passed in the subjects indicated—A., anatomy; P., physiology; M., materia medica and therapeutics; Path., pathology:—

Carl Otto Anderson, M.A. (A.), Alexander Basil Austin (Path.), Roderick Bethune (M.), Alexander Black (M.), Donald Cameron Bowie (P., M.), John Bradford (Path.), Archibald Donald Brown (A., P.), Michael John Cabalane (M.), Thomas Watson Carstairs (P.), Malcolm Chalmers, M.A. (A.), Alexander Ebenezer Cochrane (M.), Hugh Auld Cochrane (M.), Alexander Conner Connell (A., P.), Edward Mitchell Erskine Cumming (A., P.), William Dempster, M.A. (M. Path.), John Campbell Dow (A., P.), Archibald Browning Smith Drysdale (M.), Kenneth Henry Dyke (M., Path.), Duncan Finlayson (M.), James Paton Fleming (M.), Thomas Fleming (M.), Thomas Forrest (M.), Allan Donald Fraser (A.), Kenneth John Alexander Gillanders (M.), William Hadden Gordon, M.A. (Path.), Adam Smith Goudie, M.A. (M.); Peter Fife Auchinache Grant (A., P., M.), James Smith M'Lean Gray (M.), John Gordon Harrower (M.), Andrew Henderson (M.), John Hislop (M.), Tom John Honeyman (Path.), Morris Hyman (M.), Edward Porteous Irving (Path.), John Irving (M.), Jacob Joels (M.), Robert Ebenezer Kerr (M.), William Hogarth Kerr, M.A. (M.), William Mackintosh Kerr (M., Path.), James Patrick Kilty (M.), Andrew Brown M'Aulay Lang, M.A. (Path.), George Lean, B.Sc. (Path.), James Liddell (M.), Jacob Lipschitz (M.), Frederick Richard Lubovius (Path.), William Wilson Lundie (Path.), Alan James Macartney (A., P.), Duncan MacColl (A., P.), Hugh Ernest M'Coll (M., Path.), Andrew Buchanan Macdonald (A., P.), Robert Tweedie M'Gibbon (M.), Arthur Daniel Clark M'Gowan (Path.), Thomas M'Gowan (M.), James Athole Campbell MacGregor (M.), Douglas Bower M'Intosh (Path.), John William Mackay, M.A. (M.), Donald William Morison MacKenzie (M., Path.), Robert Hugh M'Killop (Path.), James Graeme M'Kinna (A. M.), James Macalister Mackintosh M.A. (Path.), William Stanley Lones M'Leish (M.), John Macleod (A., P.), William M'Linden (M.), Findlay Kerr Macmillan (A., P.), Donald Macqueen (M., Path.), Allan Watt M'Rorie (M.), John Muil Melvin (M.), George Anderson Mitchell (Path.), William Napier (M.), John Nicolson, M.A. (A., P., M.), Isaac Ladipo Oluwole (A.), James Paterson (A., P.), James Walker Patterson (M., Path.), Norman Bligh Peacock (M.), George Pearson (M.), Robert James Peters (M.), John Browning Potter (M.), Rahmat Ullah Qureshi (A., P.), Ian Menteith Robertson (M.), John Joseph Robertson (M.), Frank Watt Sandeman (M., Path.), Thomas Robertson Sinclair (Path.), Clarence Lorraine Somerville (M.), Thomas Stark (A., P.), James Stewart (A., P.), Arch Sutherland Strachan, M.A., B.Sc. (M.), Joseph Turner Taylor (A.), James Joseph Treanor (M., Path.), James Churchwill Vaughan (M.), Alexander Ross Waddell (A., P.), James Livingstone Walker (M., Path.), William Andrew Walker (A., P.), Harold Douglas Wallace (M.), Hugh Wands (A., P.), Robert Wiggins (M.), George Macfeat Wishart (M.), and Robert Young (A., P.).

Women.—Annetta Gillies Turnbull Anderson (Path.), Ellen Davidson Anderson (A., P.), Mabel Nellie Blake (M., Path.), Grace Chatterton (M.), Margharita Mary Lamont Couper (M.), Grace Anderson Fleming (M.), Margaret O'Rourke Gallagher (Path.), Mary Brown Gillespie (Path.), Jane Evelyn Hanson (M.), Janet Whyte Hepburn (M.), Mary Reid Knight, M.A. (M.), Elizabeth Cochrane Loudoun (M.), Mary Jessie Macdonald (M.), Isabella Quarrier M'Fadzean (M.), Margaret Turner M'George (M.), May Elizabeth MacIver (Path.), Maud Elizabeth Drysdale Mackinnon (A.), Margaret Gardner M'Vey (M.), Florence Frances Mitchell Milne (A., P.), Mercedes Margaret Morton (Path.), Elizabeth Park Young Paterson (M.), Vida Johnston Perry (A., P.), Margaret Innes Prangnell (A., P.), Margaret Nelson Robertson (P.), Agnes Petrina Routledge (M.), Marjory Mary Scanlan (A., P.), Katherine Scott (A., P.), Margaret Marion Catherine Steedman (M.), Dorothea Helen Suttie (M.), and Lydia Ida Huber Torrance (M.).

The following passed in Medical Jurisprudence and Public Health of the Fourth Professional Examination (New Medical Ordinance):—

John William Waddell Baillie, Joseph Edwards Bannen, William Moore Cameron, M.A., Robert Cunningham, David Heard Frederick William Hebblethwaite, George Mundell Hetherington, Henry Fielden Hollis, James Robert Riddell Holms, James Neil Jamieson, M.A., Kenneth M'Alpine, Neil MacKillop, James Macalister Mackintosh, M.A., Humphrey Robertson, M.A., Henry Buchan Sergeant, Andrew Wauchope Smith, and John Thomas Wylie.

Women.—Janetta Margaret Alexander, Winnifred Jane Crawford, Margaret Hutchison Glen, Alice Julia Marshall, May Isabella Turner Reid, Marion Watson, and Mary MacLean Weir, M.A.

The following passed in Medical Jurisprudence and Public Health of the Third Professional Examination (Old Medical Ordinance):—

Alexander George Brand, John MacDougall Clark, William Hadden Gordon, M.A., Eduardo Guillermo Sanchez Hall, Tom John Honeyman, Andrew Brown M'Aulay Lang, M.A., Arthur Daniel Clark M'Gowan, Alexander Benham Stich, B.Sc., and John Allan White.

The following candidates passed with distinction in the subjects indicated:—

In Zoology—Alan Percy Agnew, Mary Baird, Elsie Florence Farquharson, M.A., Thomas Fletcher, Robert Dick Gillespie, James Lorimer Halliday, Mary Johnston Macfarlane, Alexandrena Miller Maclennan, James M'Nair, John M'Laughland Strang, Mary Carswell Walker, Helen Frances Wingate, and John Wyllie, M.A. In Chemistry—Alan Percy Agnew, James Lorimer Halliday, Margaret Longwill Johnston, George William Murray, John M'Laughland Strang, William Lees Templeton, Helen Frances Wingate, and John Yule. In Anatomy—Archibald Donald Brown. In Physiology—Alan James Macartney and Thomas Stark. In Medical Jurisprudence and Public Health—William Moore Cameron, M.A., James Neil Jamieson, M.A., Andrew Brown M'Aulay Lang, M.A., James Macalister Mackintosh, M.A., and Mary MacLean Weir, M.A.

QUEEN'S UNIVERSITY OF BELFAST.—At examinations held recently the following degrees and diplomas were conferred:—

M.D.—Samuel H. Davison and Frederick C. Mann.

M.B., B.Ch., and B.A.O.—Eileen M. Bell (second-class honours), David Corry, John Cullenan (second-class honours), Charles F. Davey, Samuel J. W. Donald, James E. Finlay, Mary E. Henry, Mary M. Keirns, John M. McCormack, James C. McMillan (second-class honours), Joseph R. M. Mackenzie, John F. W. Meenan, William N. Montgomery, and Robert L. Sinclair.

Diploma in Public Health.—Alfred M. Elliott (*in absentiâ*), Philip J. Gaffikin (*in absentiâ*), Herbert M. Jackson, and Robert J. Morgan.

HUNTERIAN SOCIETY.—The annual general meeting will be held at 1, Wimpole-street, W., on Wednesday next, April 26th, at 8.30 P.M. The principal business will be the election of officers for next session.

Parliamentary Intelligence.

HOUSE OF COMMONS.

WEDNESDAY, APRIL 12TH.

The Medical Profession and the War.

Sir JOHN LONSDALE asked the Under Secretary for War whether he was aware that there were a number of practising physicians and surgeons above the age of 45 who would be willing to volunteer for special and general service at home, and thus enable the War Office to free active service men for work at the front; and whether the War Office would officially invite all medical men, without limitation of age, to offer their services for the period of the war under a scheme which would ensure proper recognition and due consideration of the special qualifications of practitioners who volunteered.—Mr. TENNANT replied: Medical men between the ages of 45 and 55 are being employed as commissioned officers for general service in the United Kingdom. Medical men over 55 may offer their services for local employment to the general officer commanding-in-chief of the command in which they are living or in which they desire to do duty with the troops. I think the honourable baronet and my medical advisers are really at one in this matter. In other words, the policy should be that medical men of more advanced years render the country better service by undertaking the care of the civilian population and thus setting free those of military age who are physically fit for duty at home or abroad.

Sir JOHN LONSDALE: Is the right honourable gentleman aware that the medical profession are looking for a clear and definite lead from the War Office in this matter, which they have not had up till now?—Mr. TENNANT: I am surprised to hear my honourable friend say that. We have endeavoured to carry out the policy which he advocates to the best of our ability, and we are continuing to do so.

Mr. RONALD MCNEILL asked the right honourable gentleman whether, with a view to economising the supply of medical men available for the army, he would take steps to provide that general practitioners be, so far as possible, employed in part-time work in hospitals or in looking after the health of troops quartered in the neighbourhoods where such practitioners lived, so as to release for duty abroad men who had volunteered for whole-time service, thus obviating the necessity for asking an unnecessary number of men to take commissions in the Royal Army Medical Corps, whereby the supply of doctors for the civil population at home was in danger of being unduly depleted.—Mr. TENNANT answered: General practitioners are already being largely employed in local military work. Every effort is being made to protect the needs of the civil population for adequate medical attendance, and in this connexion the War Office is receiving the advice and assistance of representatives of the civil medical profession and of the various Government departments concerned.

The Royal Army Medical Service.

Mr. RONALD MCNEILL asked the Under Secretary for War whether he would appoint an independent committee to examine into and report upon the organisation and working of the Army Medical Service at home and abroad.—Mr. TENNANT replied: I cannot undertake action which in my view could only have the effect of dislocating and perhaps disorganising a most efficient piece of mechanism.

Mr. MCNEILL: Is the right honourable gentleman aware that a considerable number of the officers of the Royal Army Medical Corps practising at the front endorse the suggestions which I ventured to make some weeks ago in the House?—Mr. TENNANT: As the honourable gentleman has not thought it right to send me the letters, naturally I could not have the information which he has acquired.

Mr. MCNEILL asked whether the right honourable gentleman was aware that some of the most eminent specialists in the various branches of surgery had been for a long time during the war employed in field ambulances or otherwise where their special qualifications were wasted; and whether it was proposed to take any steps to ensure that doctors with special experience in different branches of medicine and surgery who had joined the Royal Army Medical Corps should be utilised to the best advantage.—Mr. TENNANT answered: Our supply of efficient operating surgeons in our military hospitals at home and abroad is fully adequate. It is necessary that a certain number of younger surgeons should do duty with field ambulances, and they are employed with those units. Every effort is made to utilise the services of medical men joining the Royal Army Medical Corps for such duties as their professional qualifications best fit them, but it is impossible to allow each individual to select the work which he considers himself most competent to undertake.

Mr. MCNEILL: Has the right honourable gentleman observed that my question says that some of the most eminent specialists in the various branches of surgery were so employed, not the younger officers, as he says in his reply, and is he prepared to deny that eminent specialists in surgery have been employed in very inferior work?—Mr. TENNANT: I am quite prepared to believe that eminent specialists have occasionally, when they are employed abroad, to do somewhat trivial and menial duties. That must be part of every campaign.

Mr. MCNEILL: Not at all.—Mr. TENNANT: I do not agree with my honourable friend. I think it is absolutely inevitable in the ordinary routine of carrying on a great campaign that it may fall to the lot of the most eminent to do most trivial duties. We retain the services of these eminent specialists, and if we have to employ them in that way occasionally I am sorry, but it is part and parcel of the difficulty of carrying on a great campaign.

Precautions against Malaria at Salonica.

Lord HENRY CAVENDISH-BENTINCK asked the Under Secretary for War, in view of the fact that malaria was prevalent in the neighbourhood of Salonica during the summer months, whether the medical authorities were taking steps to safeguard the health of our troops by exterminating the mosquitoes which bred in the adjacent marshes.—Mr. TENNANT replied: The authorities at Salonica are fully alive to the importance of the matter which the noble lord presses on my attention and they are taking the necessary steps.

Recruits and Hernia.

Replying to Mr. JOWETT, Mr. TENNANT said: Carefully selected men suffering from slight hernia, if properly fitted with a truss, may be passed for general service in the army. It is not anticipated that active service will incapacitate or harm these men.

Sickness at Oswestry Camp.

Sir FREDERICK CAWLEY asked the Under Secretary for War what were the arrangements for dealing with cases of sickness at the Oswestry camp in regard to medical staff and hospital accommodation respectively; and whether he was aware that great dissatisfaction existed as to the provision for dealing with the abnormal number of cases at this camp.—Mr. TENNANT said in reply: When I answered my honourable friend on April 6th I was under the impression that he was referring to Prees Neath camp, and the figures which I gave had reference to that camp and not to the adjoining Oswestry camp. The number of admissions to hospital at this camp from Oct. 1st to March 31st was 1754, and of those admitted 13 died, 3 of them as a result of accidents. The number of recruits training in this camp was 8500 and the total strength is 11,000. The medical arrangements at this camp are, in the opinion of the Deputy-Director of Medical Services and also of that of the senior medical officer of the camp, adequate. A medical officer is attached to each battalion. The hospital is a temporary one with 100 beds. There are in all 11 medical officers attached to the camp, 8 regimental officers and 3 officers doing duty at the hospital. In addition there are 4 medical officers belonging to the Welsh Field Ambulance, which are stationed at this camp for training. Their services are always available if required.

Massage in Military Hospitals.

Major CHAPPLE asked the Under Secretary for War whether specialists in massage who held colonial qualifications were being denied employment in military hospitals because they did not hold an Almeric Paget diploma; whether they were also being denied the right to sit for examination for this diploma unless they took the full six months' course; and whether he had any evidence that this spirit and policy were being resented by the oversea dominions.—Mr. TENNANT wrote in reply: Specialists in massage who hold colonial qualifications are not being denied employment in military hospitals because they do not hold an Almeric Paget diploma. I am, in fact, informed that there is no such thing as an Almeric Paget diploma. Six months' training is required before a masseuse can be accepted, unless her education took place some time ago. This is the rule for the qualification of masseuses in civil life. The answer to the last part of the question is in the negative.

Soldiers and Hospital Treatment.

Major ASTOR asked the Under Secretary for War whether treatment given to soldiers in hospital was applicable in the case of all kinds of diseases or wounds, and whether such treatment was continued until a cure was effected or had become clearly impossible.—Mr. TENNANT (in a written answer) replied: Hospital treatment is continued until a cure is effected or until it is obvious that the soldier will not be medically fit to remain in the service. In no circumstances is a soldier discharged from hospital (except to special institutions) unless he is able to leave without detriment to his health.

The Board of Control.

Mr. H. SAMUEL (Home Secretary) informed Mr. KING that the work of the Board of Control had not been materially

reduced by the handing over to the War Office of certain asylums.

Mr. KING asked the right honourable gentleman in what way were Lunacy Commissioners specially qualified to undertake the supervision of war hospitals; whether such duties withdrew them from their ordinary functions; whether Lunacy Commissioners so engaged were receiving additional pay from the War Office; what amount of work and control had been vested in them; whether they were subject to the War Office or Home Office or both these departments in such duties; what was the number of these hospitals under the supervision of the Lunacy Commissioners; and whether all the previous inmates had been removed from such hospitals.—Mr. SAMUEL wrote in reply: The two Commissioners whose services have been temporarily lent by the Board of Control to the War Office are both medical men with high medical qualifications and wide experience in hospital organisation and administration. It is mainly through their advice and action that the Board has been able to place at the disposal of the War Office nearly 20,000 well-equipped beds for sick and wounded soldiers. Their duties in this connexion have for the time being, to a considerable extent, withdrawn them from their ordinary functions. They are not receiving any payment from the War Office. The hospitals as soon as they were organised became military hospitals entirely under the control of the military authorities, but the latter still continued to have the advantage of the advice and assistance of the Commissioners in question in certain matters of administration that are from time to time referred to them. The number of hospitals so far provided by the Board of Control is 13, and another will be ready shortly. The previous inmates have been removed from the hospital except a small number of patients with mild symptoms, who have been retained for the purpose of carrying on the work on the farms attached to the hospitals, and are mostly housed in the outlying buildings.

THURSDAY, APRIL 13TH.

Royal Commission on Venereal Diseases.

Major ASTOR asked the Prime Minister whether it was proposed this session to give effect by administration and legislation to any of the recommendations of the Royal Commission on Venereal Diseases.—Mr. ASQUITH answered: The report is now under the consideration of the departments concerned, and to-morrow the President of the Local Government Board is receiving an important deputation on the subject. It is the intention of the Government to deal as expeditiously as possible with this matter.

The Wittenberg Camp.

Mr. GILBERT asked the Secretary for Foreign Affairs to state the number of British prisoner camps in Germany and how frequently they were visited on behalf of His Majesty's Government; and whether, in view of the recent report on the prisoners' camp at Wittenberg, he could arrange for more frequent visits to be made to all camps and for the reports received on the same to be published immediately they were received.—Sir EDWARD GREY replied: According to an official statement by the Prussian Ministry of War, which was issued to the press on Feb. 14th last, there are in Germany 25 camps for officer prisoners, 46 for rank and file, and 42 lazarettes. Nearly all the camps and a considerable number of the lazarettes have been visited by the United States Embassy at Berlin, the more important on a number of occasions. When complaints are received with regard to a camp the United States Ambassador at Berlin is requested to send a member of his staff to inspect it. The reports on camps are issued to the press as soon as they are received. The staff of the United States Embassy at Berlin is being increased by four medical men to enable more frequent visits to be paid to camps. The German authorities refused to permit a visit to Wittenberg during the period covered by the recent report, on the ground of infection. ..... The last report from the United States Ambassador at Berlin on this camp is dated on March 10th, and was issued to the press on March 28th. The report states among other things that there was a decided improvement in conditions since the previous reports in November and January, and that the commandant had been changed.

Sir HENRY DALZIEL: Were the Foreign Office aware of the serious facts of this case at the time they occurred and what steps did they take to deal with them?—Sir EDWARD GREY: As the House will gather from the report, we did not know the full facts until quite recently when the two doctors had been released from the camp. With regard to the steps taken, we pressed continually for visits of inspection to the camps and reports on the camps whenever we heard that there was trouble. The right honourable gentleman will realise from the answer I have just given that in the Wittenberg case the German authorities refused to permit visits to Wittenberg during the period covered by the recent report on the ground of infection. Therefore we could not know.

Treatment of Consumptive Soldiers.

Major ASTOR asked the Under Secretary for War how many military and Territorial hospitals had verandahs built for the purpose, *inter alia*, of providing treatment for consumptive soldiers; and whether he could state approximately the number of patients who could be accommodated and treated on these verandahs.—Mr. TENNANT replied: Soldiers suffering from pulmonary tuberculosis are discharged from the service and admitted to sanatoria under arrangements made with the Insurance Commissioners and the Local Government Board. It is true that a special type of hut has been designed with verandahs for the treatment of some cases, though not necessarily for consumptive patients, but I have no data as to the number of patients who could be accommodated in existing verandahs.

Steel Helmets for the Troops.

Colonel MCCALMONT asked the Under Secretary for War whether he was aware that the supply of steel helmets did not yet provide for every soldier whose duty took him to the trenches; and whether he could state how soon a sufficient number would be available.—Mr. TENNANT said in reply: I have acquainted myself with the state of the supply. I do not propose to inform this House or the enemy about it in detail, but the active resumption of hostilities will not find the troops in the trenches unprovided in this respect.

Colonel MCCALMONT: Can the right honourable gentleman assure the House that there is no diminution in the supply and that it is being kept up steadily?—Mr. TENNANT: Yes, the supply is, on the contrary, being accelerated.

The Notification of Infectious Diseases.

On a motion to recommit the Local Government (Emergency Provisions) Bill,

Mr. BOYTON urged the Local Government Board to reconsider the decision to cut down the fee to medical men for notification of a case of infectious disease from 2*s*. 6*d*. to 1*s*.

Mr. HAYES FISHER (Parliamentary Secretary to the Local Government Board) said that he had consulted the President on the subject, but his right honourable friend had held out no hope of foregoing the clause. The reduction in the fee was an economy asked for at all events during the war, and he could not assent to the suggestion that the reduction should not be made.

The subject then dropped.

MONDAY, APRIL 17TH.

Steel Helmets for the Troops.

Replying to Mr. ANNAN BRYCE, Dr. ADDISON, Parliamentary Secretary to the Ministry of Munitions, said: The steel helmets of which large quantities have already been supplied to the British Forces in France and of which adequate supplies are assured, possess higher protective powers than the French pattern. It is desirable that a uniform design should be adhered to, and I am not aware that steel of the requisite standard can be obtained in France. I may point out that it is most important to maintain the reliance which, I am informed, our troops now place in the helmets.

The Wittenberg Camp.

Answering Mr. MALCOLM, who put a question relating to affairs in the Wittenberg camp during the months when typhus was prevalent Lord ROBERT CECIL (Under Secretary for Foreign Affairs) said: The Germans permitted no kind of communication, either by letter or orally, as to the condition of Wittenberg during the months in question, and the Government had, I need not say, no suspicion of the horrors that were going on there or of the gross and criminal cowardice of the German medical staff in abandoning their duties to those under their charge. Neither our Allies, whose prisoners in the camp were far more numerous than ours, nor we demanded independent medical examination of the camp, and on behalf of the Government I can only express profound regret that we so under-estimated the brutality of our enemies. It is only right to say that we have no reason to suppose that other typhoid-infected camps in Germany were treated in the same way.

German Ill-treatment of Sick Prisoner.

Captain DOUGLAS HALL asked the Home Secretary whether Private A. C. Tulley, Royal Marines, with 10 years' service, died at the Barrack Hospital, Millbank, recently, weighing only five stone; whether he was aware that this man went out to Antwerp weighing about 14 stone, and was there taken prisoner by the Germans; that he was confined at Doberitz and, by statements received, was starved, ill-used, and knocked about, and finally sent back to England about the middle of February in a dying condition to the Millbank Hospital where he died within a fortnight of his reception; whether representations would be made to the American Ambassador with a view to alleviating the brutality and ill-treatment of other prisoners of war in this camp; and whether he would state how many prisoners of war returned from this camp had since died in England and

the cause of their death as diagnosed by the medical authorities here.—Mr. HERBERT SAMUEL answered: I am informed that the statements in the question are substantially correct, but there is no record of Private Tulley's weight at the time of death. It appears from his statement that he was confined in the camp at Doberitz and that after working in the wet he had no means of drying his clothes and could get no underclothes. The men were covered with lice. In July, 1915, he got rheumatic fever through going on daily fatigue duty, getting wet through and having no change. He was sent to hospital, and after five weeks was convalescent and was sent to another camp called Dyrotz about seven kilometres from Doberitz. He had to carry all his kit on the march and broke down, and was never well after that. A little later he was put into hospital at Doberitz, where he had no treatment at all and he had to depend upon an English prisoner, one of the patients. They had no drugs. When he arrived in this country he was in an advanced state of consumption and extremely emaciated, and he died in hospital a fortnight after his arrival. The Medical Board who reported upon his condition stated that it was due to exposure, insufficient food and clothing, whilst a prisoner in Germany. Tulley himself stated that the conditions in camp had much improved before he left it, and other reports confirm this. The improvement seems to have resulted from the efforts of the American Ambassador. There is no record of any other prisoners of war released from Doberitz camp having died since their return to this country.

TUESDAY, APRIL 18TH.

Medically Unfit Prisoners of War.

Mr. MALCOLM asked the Under Secretary for Foreign Affairs whether he could now state how many British civilian prisoners had been passed by German doctors as medically unfit and therefore qualified for repatriation; and what had been the result of the fresh steps announced by him to expedite the exchange of prisoners of this class.—Lord ROBERT CECIL said in reply: The answer to the first part of the question is in the negative. We have so far received no reply from the German Government to the proposals we have made to them indicated in the second part of the question.

Mr. MALCOLM asked the Under Secretary of State for War whether he could now state or circulate the categories of diseases which would qualify British prisoners of war suffering therefrom to be interned in Swiss sanatoria; whether these categories would be identical with those agreed upon in February last between France and Germany; and when the panels of neutral doctors would begin their visitations of prisoner camps in Germany and England, with a view to ascertaining how many prisoners from both countries were qualified by the nature of their infirmities to take advantage of the hospitality offered by the Swiss Government.—Mr. TENNANT answered: A definite agreement as to the diseases which will qualify British prisoners of war for internment in Switzerland has not yet been reached with the German Government. The desire is that the category of disabilities shall be the same as that which is now in force between France and Germany. It is hoped the Swiss medical men will be prepared to commence tours of inspection in British and German camps as soon as an agreement has been reached with Germany.

Women in Munition Factories.

Mr. HERBERT SAMUEL informed Lord HENRY CAVENDISH-BENTINCK that in a new General Order effect would be given to the recommendation of the Health of Munition Workers Committee that the weekly hours of work for women and girls on munitions should not exceed the normal legal limit of 60.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).
When the application of a Belgian medical man would be considered the advertisers are requested to communicate with the Editor.

BATH, WINSLEY SANATORIUM.—Assistant Resident Medical Officer, unmarried. Salary £250 per annum, with board, residence, and laundry.

BIRMINGHAM AND MIDLAND EYE HOSPITAL, Church-street, Birmingham.—Resident Surgical Officer. Salary from £200 to £300 per annum, with board, residence, &c.

BOURNEMOUTH HOSPITAL FOR SICK AND WOUNDED, Boscombe.—House Surgeon for six months. Salary £125 per annum, with board, lodging, and washing.

BRIGHTON COUNTY BOROUGH ASYLUM, Haywards Heath.—Temporary Resident Assistant Medical Officer. Salary 25 guineas a month.

BRISTOL ROYAL INFIRMARY.—House Physicians and House Surgeons. Salary at rate of £120 per annum, with board, apartments, and laundry.

BURNLEY, VICTORIA HOSPITAL.—Female House Surgeon. Salary £160 per annum, with residence, board, and washing.

BURY INFIRMARY.—Senior House Surgeon. Salary £250 per annum, with board, residence, and washing.

BUXTON, DERBYSHIRE, DEVONSHIRE HOSPITAL.—Assistant House Physician. Apartments, board, laundry, and salary as arranged.

CHESTERFIELD AND NORTH DERBYSHIRE HOSPITAL.—Second House Surgeon. Salary £150 per annum, with board, apartments, and laundry.

COBHAM, SURREY, SCHIFF HOME OF RECOVERY, Knowle Hill Park.—Resident Surgical Officer for six months. Salary at rate of £200 per annum, with board, lodging, and washing.

FEDERATED MALAY STATES GOVERNMENT.—Female Medical Officer. Salary £350 per annum. CENTRAL LUNATIC ASYLUM: Assistant Superintendent. Salary £400 per annum, with free quarters.

LEEDS PUBLIC DISPENSARY.—Female Resident Medical Officer. Salary £130 per annum, with board, residence, and laundry.

MANCHESTER NORTHERN HOSPITAL FOR WOMEN AND CHILDREN, Parkplace, Cheetham Hill-road.—Female House Surgeon. Salary £120 per annum, with apartments and board.

MANCHESTER ROYAL INFIRMARY.—Resident Medical Officer and Resident Surgical Officer. Salary £225 per annum each. Also Assistant Resident Surgical Officer, Accident Room House Surgeon, and Resident Medical Officer (Central Branch). Salary £200 per annum in each case.

NEW HOSPITAL FOR WOMEN, Euston-road, N.W.—Female Temporary Assistant Surgeon for six months.

NEWCASTLE-UPON-TYNE, ROYAL VICTORIA INFIRMARY.—Four Resident House Physicians, Four Resident House Surgeons, Resident Accident Room House Surgeon, Resident House Surgeon to Aural and Ophthalmic Department, Resident House Surgeon to Skin and Gynæcological Department, and Resident House Surgeon to Out-patient Dressing Department.

PUTNEY HOSPITAL, Lower Common, S.W.—Resident Medical Officer. Salary £150 per annum, with rooms, board, and laundry.

READING, ROYAL BERKSHIRE HOSPITAL.—House Surgeon for six months. Salary £250 per annum, with apartments, board, and washing.

ROCHESTER, ST. BARTHOLOMEW'S HOSPITAL, Kent.—Senior Resident House Surgeon. Salary at rate of £300 per annum.

SALISBURY GENERAL INFIRMARY.—Assistant House Surgeon, unmarried. Salary £100 per annum, with apartments, board, lodging, and washing.

SHEFFIELD, JESSOP HOSPITAL FOR WOMEN.—Female Junior House Surgeon, unmarried. Salary £80 per annum, with board, residence, and laundry.

SHEFFIELD ROYAL INFIRMARY.—House Physician. Salary £120 per annum, with board and residence.

SOUTHAMPTON FREE EYE HOSPITAL.—House Surgeon. Salary £100 per annum, with board, lodging, and laundry.

VENTNOR, ISLE OF WIGHT, ROYAL NATIONAL HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST.—Assistant Resident Medical Officer.

WEST HAM AND EASTERN GENERAL HOSPITAL, Stratford, E.—House Physician.

THE Chief Inspector of Factories, Home Office, London, S.W., gives notice of a vacancy for a Certifying Surgeon under the Factory and Workshop Acts at Acle, in the county of Norfolk.

Births, Marriages, and Deaths.

BIRTHS.

FAULKNER.—On April 14th, at The Rectory, Stanford-le-Hope, Essex, the wife of Captain Cyril D. Faulkner, R.A.M.C., of a son.

MAY.—On April 12th, at The White House, Sonning, Berks, to Dr. and Mrs. Norman May, a son.

WILLIAMS.—On April 12th, at Bankside Nursing Home, Hendon, Nina (née Humphreys), the wife of Captain Charles Eustace Williams, R.A.M.C., British Expeditionary Force, France, of a daughter.

MARRIAGES.

CRAWFORD—JENNY.—On April 12th, at Christ Church, Woburn-square, London, Thomas Maitland Crawford, Lieutenant, R.A.M.C., to Mabel Gertrude Louise, only daughter of the late Jacques Jenny and Mrs. Jenny, of London.

MARTIN—GLADSTONE.—On April 3rd, at St. Paul's Church, Valetta, Malta, Captain James Sackville Martin, R.A.M.C., to Florence, eldest daughter of the late C. E. Gladstone, Bengal Civil Service, and Mrs. Gladstone, Roseneath, Jersey.

WILSON—MOTTERSHALL.—On April 12th, at the Church of St. Bartholomew the Great, London, Walton Ronald Wilson, Lieutenant, R.A.M.C., to Emily Constance Mottershall, niece of Mr. and Mrs. Walter Southern Hunt, of Eastbourne.

DEATHS.

BALL.—On April 10th, Lieutenant Malcolm E. Ball, M.B. Lond., R.A.M.C.

DONALDSON.—On April 7th, 1916, at his residence, 23, Eaton-square, Terenure, Co. Dublin, Robert Donaldson, M.R.C.S. Eng., J.P., late of Fort Hill, Castle Shane, Co. Monaghan.

PRALL.—On April 5th, at Mhow, India, Cedric Barkeley Prall, Lieutenant-Colonel, I.M.S., aged 44 years.

SPENDER.—On April 14th, at Marlborough-buildings, Bath, J. K. Spender, M.D. Lond., aged 86 years.

STEVENS.—On April 13th, at Southampton, after a long and painful illness, George Stevens, F.R.F.P.S. Glasg., late of Norton, Suffolk, aged 75 years.

N.B.—A fee of 5s. is charged for the Insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

MEDICAL MEN AND CORONERS' JURIES.

AT a recent inquest at Reading a coroner's jury thought fit to censure a medical man who had not attended immediately when summoned, his conduct being ascribed to "money-grubbing," with the added suggestion that he "might be a German." Dr. F. W. Stansfield, writing to the *Reading Standard*, puts the medical man's side of this often-raised question so clearly that the following passage from his letter deserves quotation: "A medical man is as much entitled to dispose of his services, for money or otherwise, in any way that he may choose as any other citizen." If it were not so, the writer adds, to enter the medical profession would be to submit to slavery, and would be the act of a lunatic. He further points out that those persons, rich or poor, who pay their medical attendants promptly and without grumbling, have some claim for consideration in return, and that the medical man cannot justly be blamed for giving the preference to them when there are several claims upon his time. This, we may add, would probably be the course adopted in parallel circumstances by the members of a coroner's jury as men of business and in the ordinary exercise of their trades. A juror, for example, who dealt in food, would not feel called upon to supply the necessaries of life gratis to a poor applicant, and would even more readily realise that it was undesirable to do so if the goods had already been ordered by one of his regular customers. The matter is sometimes referred to as an issue between "the medical profession and the public," and it may justly be pointed out that the public includes others besides the deceased person whose death happens to form the subject of an inquest. Dr. Stansfield sums the matter up by saying that a man should not be insulted who has committed no crime, and who "was only doing his duty in giving his services first to those who had a legal claim to them at that particular time."

"QUIDOS" CORK LIFE-SAVING APPLIANCES.

IN THE LANCET of March 14th, 1914, p. 800, we noticed the "Quidos" cork sanitary cushion, of which Mr. Leoline Edwards (81, St. Margaret's-road, Twickenham) is the inventor. He now calls our attention to various forms of life-saving apparatus—deck-chairs, cushions, and life-belts and waistcoats—stuffed with the prepared "Quidos" cork, the claim made for all of them being that they can be used or worn on deck in the normal way and become valuable life-saving apparatus in the case of shipwreck. An ingenious contrivance is the life-saving scarf, in form like a ladies' boa, which is easily adjusted round the body of the wearer if warmth is required, or can be rolled up into a soft cushion or pillow. We presume that the buoyancy of the cork fabric is sufficient in the amounts used to support the wearer in water.

VITAL STATISTICS OF BARBADOS.

THE Blue-book of Barbados for the year ended March 31st, 1915, has recently been presented to Parliament. The total estimated population of the colony is given as 176,397 (74,476 males and 101,921 females), an increase of 3038 on the previous year. The birth-rate per 1000 in 1914 was 37·4, as against 31·9 in 1913, and the death-rate was 36·5 per 1000, as against 21·3. Illegitimate births numbered 4092, or 62·4 per cent. of the total births. The burials of children under a year old numbered 2641, giving a rate of 403 per 1000 births, as against 213 per 1000 in 1913 and 416 per 1000 in 1912. The admissions to the General Hospital in 1914 totalled 2980 (daily average of patients 147), and there were 271 deaths. The out-patients during the year numbered 27,738. At the lazaretto there were 14 admissions, 2 discharges, and 11 deaths, leaving 121 inmates at the end of the year. An Act has been passed by the legislature providing for the compulsory segregation of any supposed leper found in a public place, if proved to be such, with certain concessions for isolation in private under regulation. At the lunatic asylum the daily average number of patients increased from 399 in 1913 to 424 in 1914; the admissions numbered 114, the discharges 51, and the deaths 91.

AN INGENIOUS PAPER FASTENER.

A PAPER fastener which dispenses with pins, wire clips, and similar contrivances, and thereby does away with the damage to fingers and nails with which most of us are familiar, has a distinct claim on consideration. The "Kibi" fastener is supplied by the Kingsway Commercial Association, Limited, of Windsor House, Kingsway, London, W.C. It is a form of punch which operates by separating, not punching out, a neat triangular opening in the papers to be attached to each other; the separated portion is slipped by the action of the punch through a slit that is made at the same time, the whole being accomplished instantaneously by the closing of the handles of the instrument, which resembles a pair of grips, and measures roughly 5 inches by 2½ inches. Just those papers which require to be permanently attached are particularly adapted to the "Kibi," whilst the fastening can easily be undone when desired. The instrument is nickel plated, and costs 17*s.* 6*d.*, post free.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

Medical Diary for the ensuing Week.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.

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WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations. Dr. Simson: Diseases of Women.

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FRIDAY.—10 A.M., Dr. Simson: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Addison: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Eye Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

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(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, April 18th, 1916.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
April 12	29·590	S.W.	0·19	69	54	42	45	45	Raining
,, 13	29·466	S.W.	0·11	102	56	44	45	49	Cloudy
,, 14	29·724	N.W.	0·02	104	55	42	42	46	Cloudy
,, 15	29·962	N.	0·03	100	53	40	40	45	Cloudy
,, 16	30·120	W.	0·12	105	55	38	44	48	Cloudy
,, 17	29·560	W.	0·01	95	57	48	49	52	Cloudy
,, 18	29·220	W.	0·21	94	52	45	44	47	Cloudy

The following magazines, journals, &c., have been received:—Medical Review, Journal of Pathology and Bacteriology, Public Health, Transactions of the Society of Tropical Medicine and Hygiene, Birmingham Medical Review, Canada Lancet, Canadian Medical Association Journal, Annali d'Igiene, La Clinique Ophtalmologique, Dublin Journal of Medical Science, Annales de Gynécologie et d'Obstétrique, St. Bartholomew's Hospital Journal, Edinburgh Medical Journal, British Journal of Children's Diseases, Midland Medical Journal, Journal of State Medicine, Revue de Gynécologie et de Chirurgie Abdominale, Revue de Chirurgie, Journal of the Royal Naval Medical Service, American Journal of Medical Sciences, Review of Neurology and Psychiatry, Medical Review of Reviews, Archives of Radiology and Electrotherapy, Surgery, Gynecology, and Obstetrics, American Journal of Orthopedic Surgery, Modern Hospital, &c.

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The Milroy Lectures

ON

INFANTILE MORTALITY AND THE RELATIVE PRACTICAL VALUE OF MEASURES DIRECTED TO ITS PREVENTION.

Delivered before the Royal College of Physicians of London

BY S. G. MOORE, M.D. VICT., D.P.H. ENG. CONJ.,

MEDICAL OFFICER OF HEALTH AND LECTURER IN PUBLIC HYGIENE AND SANITATION, TECHNICAL COLLEGE, COUNTY BOROUGH OF HUDDERSFIELD.

LECTURE II.[1]

Delivered on March 14th.

MR. PRESIDENT AND GENTLEMEN,—As already pointed out, it is a matter of course that every statement contained in the official publications of the Local Government Board carries very great authority. Equally as a matter of course one accepts them substantially. But having in mind the fact that it is not given to human beings to be perfect, and fortified by the reflection that I have devoted exceptional attention to this subject for many years, I venture to reiterate the opinion that in these reports too great importance is given to general sanitation in accounting for the reduction in the infant mortality figure observed of recent years, and that too little importance is given to work especially directed to meet the particular circumstances of infant life. In support of this view I exhibit three charts.

INFLUENCE OF SPECIAL MEASURES ON INFANT MORTALITY.

The first (Fig. 1) shows the death-rate in England and Wales and in Huddersfield from 1870 to 1914. It will be observed in the first instance that these two rates follow one another fairly closely, especially of recent years, and that substantially the decline is uniform and progressive. The second chart (Fig. 2), which shows the infant mortality figure in Huddersfield, does not follow the same course, especially in the last nine or ten years. It will be seen that during the period antecedent to 1906 the curve is higher than during the succeeding years. In fact, it is hardly too much to say that the chart can be divided into two periods—one before 1906 and one after that year. It was in 1907 that the special work against infant mortality in Huddersfield came into full operation.

The foregoing considerations are reinforced by the following facts. The city of Liverpool is well known for its efficiency in sanitation, and notably for the attention paid to housing. With the possible exception of Birmingham, no sanitary district has expended so much time and money in this direction. Two years ago the sum of £1,350,000 had been spent on housing schemes, but, as will be seen from Fig. 3, the infant mortality figure remains high. Moreover, it is well known that infant mortality is low in rural and generally in small urban districts, particularly so in agricultural areas, but it is equally well known that sanitation is of the lowest standard in these very places.

I by no means wish to suggest that general sanitation, and especially municipal cleanliness, do not favourably affect the health of infants as of inhabitants generally, but, speaking as one who has given close attention to the problem for a long while, I would lay stress upon the view that other factors are of a greater significance and importance. It is well known that a heavy toll on the lives of the very young is levied in industrial districts where the employment of women is at a minimum, but where the standard of life is low, as well as in other industrial districts where their employment is at a maximum. I believe that the explanation of the former phenomenon is that the infants are individually neglected in the homes of the people, and I have no doubt that a breast-fed baby living in insanitary surroundings, but cared for by its mother would have a very much greater chance of surviving than one bottle-fed and neglected by its mother, however excellent might be the sanitation of the house and the district in which it lived. Instances have been adduced, where in the same street in certain families there have been many surviving children, and in other

FIG. 1.

Death-rates: England and Wales (continuous line); Huddersfield (broken line).

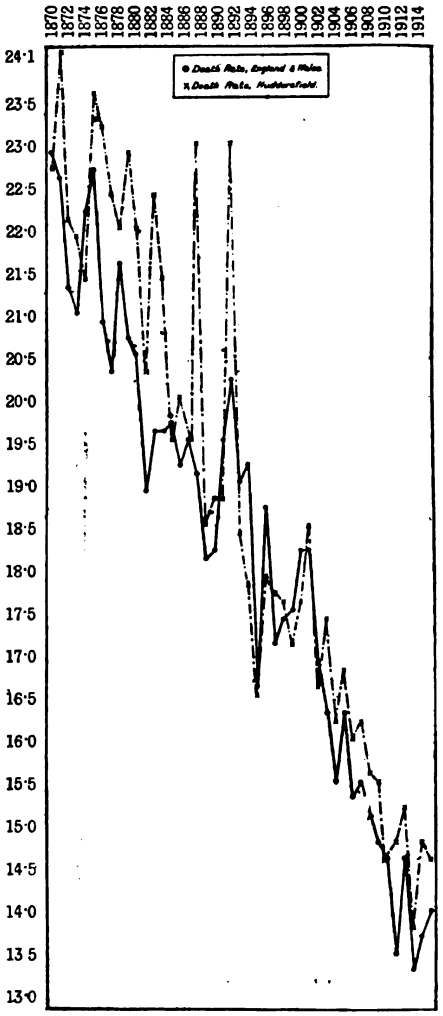
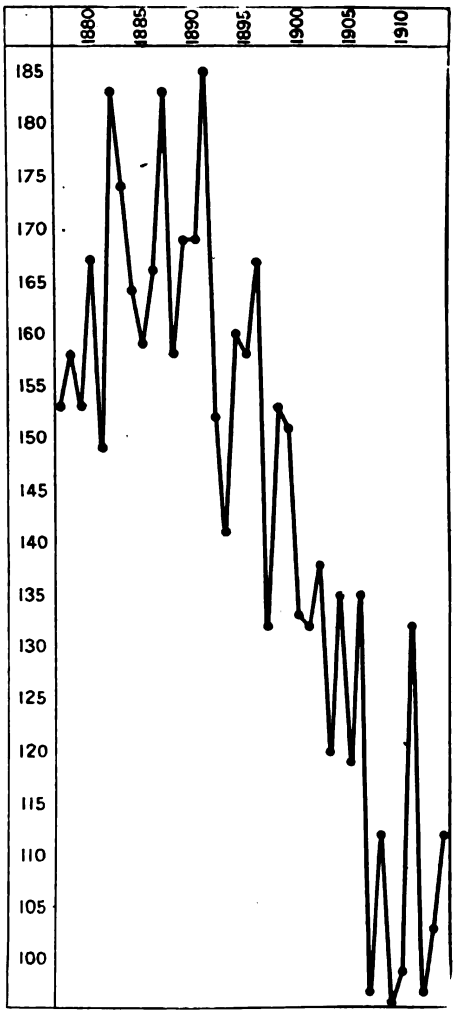


FIG. 2.

Huddersfield: Infant Mortality since 1877 of Deaths per 1000 Births registered.

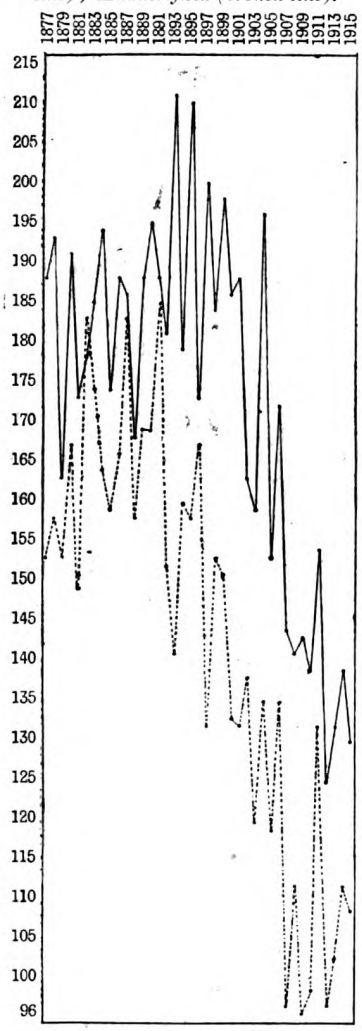


[1] Lecture I. was published in THE LANCET of April 22nd, 1916.

families of a similar social grade the survivors have been few. An instance in Liverpool has been cited frequently, where in one house, out of nine children born, all survived, and next door, out of a similar number of births, there was but a single survivor.

FIG. 3.

Infant Mortality: Liverpool (continuous line); Huddersfield (broken line).



In this connexion the fact appears to be worthy of emphasis that if we rely upon improvement in the general sanitation to reduce the excessive fatality among infants, even the most sanguine must recognise that many generations will pass before anything like a satisfactory result can be realised. On the other hand, the events of recent years have demonstrated that special measures directed to individual infants have given results immediate and better than were anticipated.

RELATION OF INFANT MORTALITY FIGURE TO RATE IN NEXT FOUR YEARS OF LIFE.

In view of the statements to which prominence has been given to the effect that the result of preserving the lives of infants would have a generally bad effect on succeeding ages, based on the argument that heredity rather than environment should be taken into account, I have prepared the following chart. (Fig. 4.) The curve showing the death-rates per 1000 per annum at ages from 1 to 5 years follows very closely the corresponding curve at age 0 to 1 year. But if the work against infant mortality were only temporary in its influence, the curve at succeeding ages ought to have shown a rise. Of course, this is not the case. I have referred to these arguments against the utility of endeavouring to reduce the infant mortality figure elsewhere and from another point of view. It really does not appear to be worth while to labour the point, but I will recall the fact that in the Local Government Board Reports on this subject the same demonstration is given, and over extended age-periods. The same thing is better seen where triennial periods are taken. By the massing of the figures a smoother curve is obtained. (Fig. 5.)

FIG. 4.

Huddersfield: Death-rate per 1000 per annum—years 1877–1914.

Upper line represents death-rate at ages 0–1 years.
Lower line ,, ,, ,, 1–5 years.

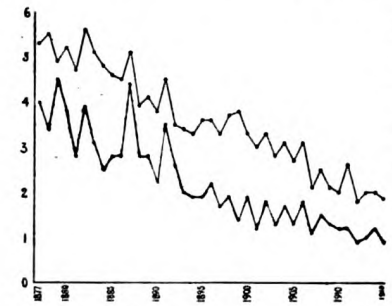
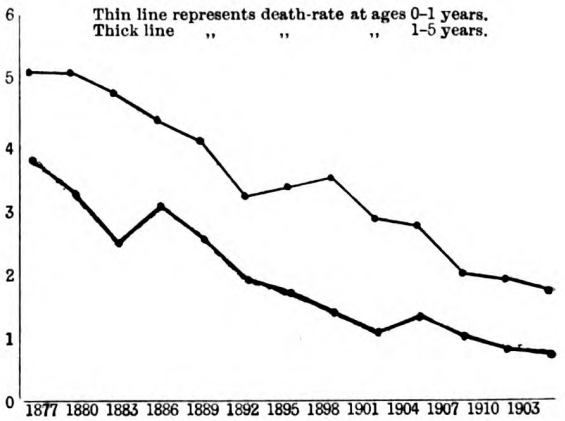


FIG. 5.

Huddersfield: Mean Death-rate per 1000 per annum from 1877–1915 in Triennial Periods.



The result in Huddersfield is amply corroborated by the results shown in the following series of charts giving the death-rates at each of the first five years of life for England and Wales calculated per 1000 survivors at each age-period. (Figs. 6, 7, 8, 9, and 10.) It will be seen that the curves

FIG. 6

England and Wales: Diagram showing the Annual Infant Mortality from 1870 to 1914.

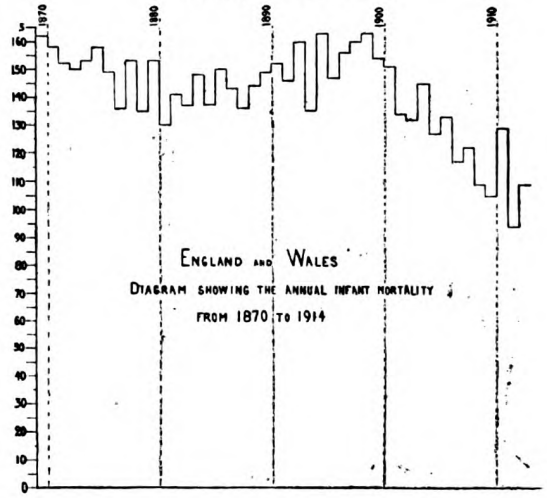


FIG. 7.

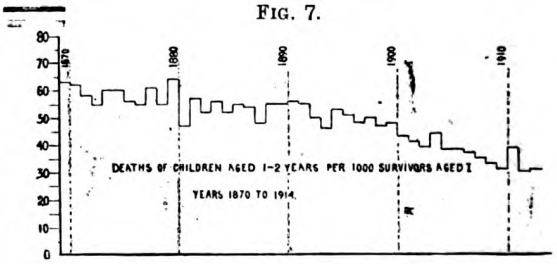


FIG. 8.

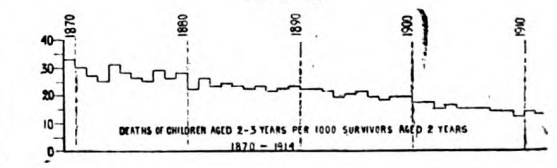


FIG. 9.

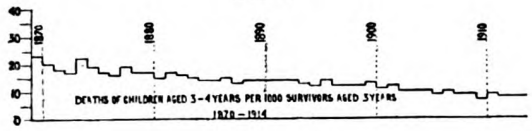
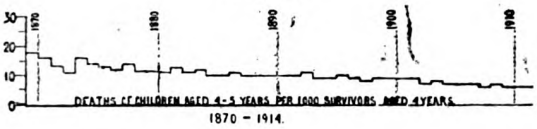


FIG. 10.



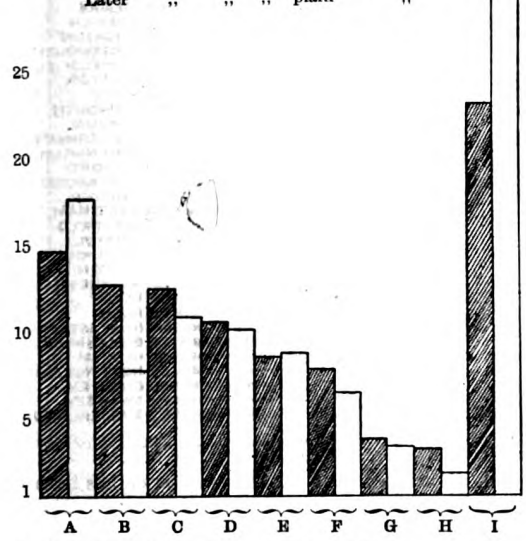
formed, after making allowance for the greater vulnerability at the earliest age-period, substantially follow one another—that is to say, a reduction in the infant mortality rate (deaths under one year of age) is followed by a reduction in the mortality in succeeding years.

PRINCIPAL CAUSES OF INFANT MORTALITY IN HUDDERSFIELD.

These are expressed as percentages of the whole: contrasting 1899–1906 with 1907–1914. This diagram (Fig. 11) is of considerable interest generally and brings out a particular fact of much importance. It displays the diseases which are chiefly responsible for infant deaths expressed as percentages of the total mortality. Those comprised in the "other diseases," represented in the last two columns, have been omitted from individual display for various reasons, principally because each represents so few

FIG. 11.

Huddersfield: The principal causes of Infant Mortality expressed as percentages of the whole: contrasting 1899–1906 with 1907–1914.



A, Premature birth. B, Atrophy, debility, and marasmus. C, Diarrhœa. D, Bronchitis. E, Pneumonia. F, Convulsions. G, Whooping-cough. H, Measles. I. All other diseases.

deaths, but also for causes connected with death certification. "All other diseases" caused 23·3 per cent. of the deaths in the earlier period; the sum of the values of the other columns represents the balance 76·7 per cent. The figures for the later period are 30·2 per cent. and 69·8 per cent. respectively.

Apparently the attempt to save infant life in Huddersfield has led to a relative increase of deaths from premature birth, pneumonia, and "all other diseases," and to a relative decrease in all the other principal causes of death—notably from "atrophy, debility, and marasmus," and diarrhœa.

In reflecting on this diagram it should be borne in mind that during the later period, 1907–1914, there was a *positive* reduction of infant fatality and that the diagram displays the transference of the death incidence from one cause to another—hence its significance. And hence the outstanding significance and importance of the fact shown in the first two columns. The proportion of deaths from premature birth rose from 14·9 per cent. to 17·8 per cent. This is compatible with the belief that preventable deaths have been eliminated in part, thus increasing the proportion of deaths which hitherto have been considered to be unavoidable. This belief is strengthened by a consideration of the other columns. Diarrhœa, bronchitis, convulsions, whooping-cough, and measles, in fact, all the columns except that representing pneumonia, show a decline.

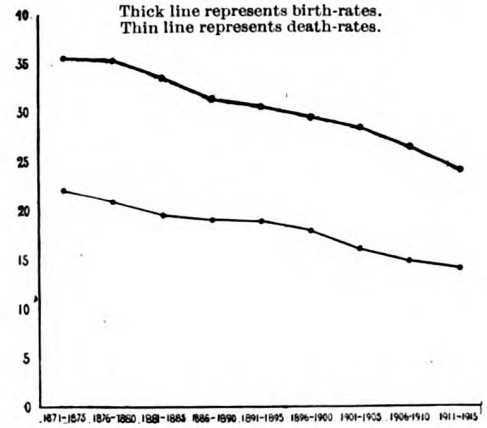
Now I am able to state as the result of an extended intimate experience that many persons, including coroners and medical men as well as certain eugenists, hold the opinion that many deaths at early ages result from a lack of vitality consequent on premature birth. If that view be well founded, it appears to follow that atrophy, debility, and marasmus should show a relative increase, coincident with the increase in deaths from premature birth. But the converse appears. In fact, the decrease of mortality from these three factors of the infant death-rate is greatest of all—from 13 per cent. to 8 per cent. of the total deaths. Therefore I feel justified in holding the belief that hygienic procedures directed to counteract the disability resulting from a premature entrance into the world are not, as it were, beating themselves in vain against an inherent ineradicable lack of vitality, but that, on the contrary, they do meet with a not inconsiderable measure of success.

RELATION BETWEEN BIRTH-RATE AND DEATH-RATE IN ENGLAND AND WALES.

It will be seen from Fig. 12 that while both curves are falling, that representing the birth-rate is falling more rapidly than that of the death-rate. As a matter of fact, the reduction in the birth-rate amounts to 32·7 per cent., while the reduction in the death-rate during the period shown is

FIG. 12.

England and Wales: Birth-rates and Death-rates 1871–1915 in Quinquenniads.



36·8 per cent., but the birth-rate has fallen about 12 per 1000 and the death-rate only 8 per 1000. Were individual years shown, of course the curve would not be so smooth. This was seen in the chart showing the death-rates for England and Wales and Huddersfield, which was exhibited in connexion with the fall in the infant mortality figure.

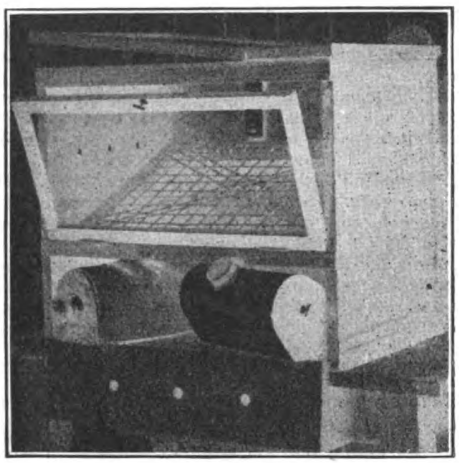
In the present chart the fixed points represent the average death-rate during a period of five years. It will be noted that during the first five-yearly period, from 1871 to 1875, the birth-rate was 35·5 per 1000 and the death-rate 22 per 1000. The fall is fairly uniform for both curves, but that showing the birth-rate is the steeper, so that they tend to run together. At what period this result (which will be calamitous to the race) will be realised we may not attempt to predict; it is probable that disturbing factors will make themselves felt, but it may not be lost sight of that whereas there is nothing to prevent the continuance in the decline of

the birth-rate which may even be accelerated, human vitality does fix a point below which the death-rate cannot fall.

HANDY INFANT INCUBATOR.

Some years ago I was shown in Finsbury a simple form of incubator, suitable for use in the homes of the people, and calling for the minimum of skilled attention. (Fig. 13.) It was made from one of Tate's sugar cases, and divided horizontally into two compartments by means of webbing. In the lower compartment are placed one, two, or three ordinary earthenware hot-water bottles. The infant is placed in the

FIG. 13.



An incubator made from a sugar case.

upper compartment, in which there is a thermometer. The top and sides of the incubator are hinged and glazed. Ventilation is secured by augur holes, some of which are covered by slides, so that they may be opened or closed, and so the temperature may be regulated.

The incubators weigh but little, and can readily be carried about. The total cost is less than 10*s*., but the same thing in a more ornamental form has been placed on the market by a firm of wholesale druggists, Messrs. Sumner, of Liverpool. It will be seen that the manipulation of these incubators is quite simple, that there is no danger of overheating; in fact, they are suitable for use in the homes of the people. At Huddersfield we commenced with two, and have found it necessary to increase the number to six.

In the majority of cases they are used intelligently, and undoubtedly have been of service, but the regrettable fact must be recorded that from time to time the offer of one on loan, without charge, is rejected; and also, from time to time, it is found that after they have been employed for a few days the trouble of tending them seems too great to those in charge of the infant. The same tendency is evinced in another direction; many mothers, rather than be at the pains of tending their offspring in the incubator during the night will take it into bed. There seems some excuse for this. Such mothers argue that the warmth of their own bodies is sufficient and natural.

Records exist of the loan of these incubators on 75 occasions during the last four years. In respect of 16 it could not be established whether or not they were actually used; of the remaining 59, the records showed that they were employed in 32 instances, and that they were not employed in 27 instances. In the former series 21 of the infants lived and 11 died, and in the latter 12 lived and 15 died. Thus, where the incubators were used 65·6 per cent. of the children lived and 34·4 per cent. died; but where they were not used only 44·4 per cent. lived, while 55·5 per cent. died. It will be understood, of course, that the incubators are only used where the infant is very premature and weighs very much below the normal.

The total numbers are so small that if the differences were inconsiderable these figures would be of little value, but when it is recognised that when the appliance was employed almost twice as many premature babies lived as died, and that a greater number died than lived when it was not employed, there can be no doubt that this very simple contrivance has done useful service. But there is another and a dark side of the picture. In a town of 110,000 population, during a period of four years, it was judged desirable by a competent medical authority to provide an incubator with a view of saving the life of a human being on 75 occasions, but those whose plain duty it was to take every possible means, not only to safeguard and to nurture, but to cherish the helpless being, in 27 instances, for one reason or another, did not avail themselves of the help not only proffered but urged upon them.

No excellence of sanitation nor adequacy of municipal cleanliness can by any possibility have affected these particular results, yet to my mind there is an imperative necessity that something be done in this regard, and to me it is clear that action can only follow one or other of two lines—public opinion must be educated, or the State must take action and require protection for such cases. The laws of a country are little more than the codified public opinion, based on the current morals, manners, and customs of the people. But the enactment of a statute would go a long way to cultivate a sound public opinion.

REDUCTION OF INFANT MORTALITY IN LARGE TOWNS.

This slide (Fig. 14) shows the amount of reduction of the infant mortality figure which has been observed in 30 of the large towns of England and Wales, comparing the period from 1877 to 1906 with the period 1907–1914. The reason for the separation of the total period 1877 to 1914 into these two particular parts has been seen in the preceding diagrams which displayed for England and Wales, for Liverpool and for Huddersfield, a definite separation of the curves at that period—one of high infant mortality and another of comparatively low infant mortality.

I submit that this diagram, taken in conjunction with those just referred to, establishes two facts. First, that the reduction of mortality and the saving of infant life has been very substantial, and in the second place, that it has not been

FIG. 14.

Infant Mortality (30 Large Towns).

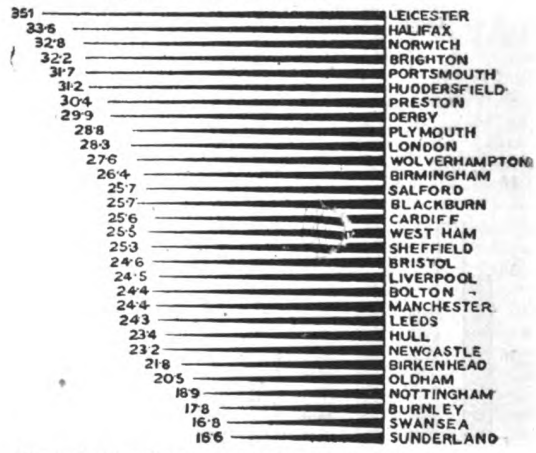


Chart showing the improvement per cent. in the two means 1877–1906 and 1907–1915.

gradual. But the improvement in sanitation has been slow, gradual, and not marked by any abrupt change. The same is true of municipal cleanliness, the spread of education, the habits of the people, and so on and so forth. The facts displayed here constitute one of the reasons which led me to the conclusion that it is by direct rather than by general methods that we must hope still further to improve the babies' chances of surviving.

EXPECTATION OF LIFE IN HUDDERSFIELD.

One result of universal compulsory elementary education has been an enormous increase of printing and, it follows, an enormous amount of reading. We recognise that some printed matter stimulates thought, but that can hardly be said of the reading printed day by day in the press; at least, I do not think that it leads to excogitation on the part of the masses. Many absorb the printed word and rest content at that, instead of pondering the matter and resolving for themselves the ultimate significance of the facts stated. Thus we

read and speak of the reduction which has taken place in the deaths among babies, and in a general way we accept this as being a good and desirable thing. We become vaguely conscious of some of the consequences in increased health, diminished sickness, and reduced mortality.

I wonder how many of those who have considered this subject have asked themselves the question: What is the result on the expectation of life of this reduced infant mortality, and ought not the insurance companies to reduce their premiums in consequence? I cannot (at least I will not) answer the latter part of the question at all, neither can I state the increased expectation of life at birth for the whole country; but owing to the kindness of Mr. Moorhouse, the actuary to the Friends' Provident Institution, I am able to do this for Huddersfield, both for males and females:—

	Assumed deaths during first year per 1000 births.	Complete expectation of life; years.	
Males	156	49·4	+ 3 years net.
... ...	105	52·4	
Females ...	156	51·8	+ 3·1 years net.
... ...	105	54·9	

The mean infant mortality figure prior to the special work against infant mortality in Huddersfield was 156. The mean since that work has been in operation is 105. Thus this particular work has added three years to the life of each generation.

EXISTING PROVISIONS FOR INFANT AND CHILD WELFARE.

As a preliminary to a consideration of the relative value of measures directed to the protection of infant lives, it will be well if we try to take stock of what is being done at present, and here we meet with a difficulty which presents the problem in a new phase. I think I may state that it is manifest that the work of protecting the young human being ought to be done naturally, as a matter of course, and ought to be done adequately by the parents and by the State. Furthermore, that provision ought to be made in the statutes governing the Realm to ensure the same. How strange, how singular, is it not, that the existing state of affairs has *quite recently* been discovered to be such that special and extraordinary measures have been found to be necessary, and have come into being? Yet that even to-day the laws under which we live do not take these things into cognisance. Apart from the Children Act, I think I am safe in stating that while the legal rights of infants to property are safeguarded, our statutes contain nothing, unless it be some archaic and forgotten medieval law, which in any way protects the natural and primal right of the infant. It will be, of course, understood that I do not refer to the ordinary laws (in whose protection we all share) against assault, murder, and that sort of thing.

Well, what are the works which have come into being of recent years? Provision is made, more or less systematically, and more or less completely, for notice to be taken by the sanitary authority of the existence of the infant. As we have seen, less than ten years ago this was done for the first time in Huddersfield, and only last year did it come into operation for the whole country (the significance of the fact that the number of deaths of infants which occurred under the old system was excessive may not be lost sight of). This is followed, more or less completely, and more or less systematically, by a visit to the infant in its home, and here let it be recognised that the quality of the service rendered is very unequal and leaves much to be desired. I will have more to say on this point later.

Next we have health societies. The Directory of Health Societies, compiled and issued by the National League for Physical Education and Improvement, contains the names of 489 different associations. Nine of these are national, 70 are municipal in the sense that they are associated with, and assisted by, different sanitary authorities; the balance, 410, are purely voluntary. As a result of a scrutiny of the annual reports issued by these societies and a computation based thereon I estimate that they assist annually 155,000 infants. It will be understood that this is by no means an actual number; the estimate is very rough and ready, for more than one reason—e.g., when we find that one society states that 500 children made 900 attendances, another society with 300 children have 2350 attendances, and a society with 100 children had 1550 attendances, one is driven to the conclusion, even after making allowances for different procedures, that the figures may not be accepted as being rigidly accurate. Another reason is that the figures are based on a small number out of the total.

The activities of the different societies do not appear to bear any very definite relationship with the titles under which they function. The work which they undertake is very varied. Thus, they visit in the homes, either by means of paid or voluntary assistance; they maintain institutions to which infants may be brought. In some of these, only hygienic advice is given; in others, treatment is also afforded. Others give lectures on a great diversity of subjects. Others, again, hold classes where practical work bearing on the welfare of infants and children is demonstrated. Very many issue leaflets containing advice. A few day nurseries are maintained by voluntary societies, and many provide clothing for the infants and food for the mother or infant. In addition to the foregoing, in six localities antenatal work of various kinds has been established. This side of the work is still very recent and undeveloped; no doubt very much more will be done in the near future.

This summarised statement is all that the occasion permits, but I trust it will lead to a recognition of the fact that a large amount of very excellent work has been organised and is being carried out in this country by ladies and gentlemen who are actuated by a sincere desire to serve their fellow men, and who do render this service at the cost of much time and labour to themselves. Conduct of this kind deserves commendation and obtains our sincere admiration. Yet it partakes of the nature of charity. The infant has the right to protection.

Next we have milk depôts, the English form of "gouttes de lait." Here let me say in passing that I trust there will not arise in England anything at all resembling the unfortunate rivalry which arose between Variot and Budin in Paris—the one maintaining the excellence and desirability of the "gouttes de lait" against the other who advocated the consultations. To the onlooker it was manifest that both organisations were doing excellent work. These milk depôts are places where milk is modified and pasteurised and placed in a number of bottles sufficient for the daily supply, so that each contains one meal for the infant, the idea being to provide an appropriate and safe food at each age. They had a great vogue some years ago, especially in France and Spain. (In the United States a prominent citizen of New York, Mr. Nathan Strauss, whose wealth enabled him to operate on a scale commensurate with the size of the city, distributed annually more than one million bottles and more than three million glasses of pasteurised milk. He has published interesting reports, which show clearly that the result has been highly beneficial.) In this country 13 such institutions have been established, 5 of which are in London. This movement against infant mortality, however, appears to have languished. Eleven were opened between 1899 and 1906, one in 1910, and one in 1912. Four have been closed. The cost in relation to the number of infants helped appears to be the stumbling block. There can be no doubt that the cost per meal of pasteurised milk is considerable. On the other hand, it is surely an imperative thing to provide food for infants which will not destroy them. Yet such are the conditions of the industrial milk-supply in this country that in hot weather the only milk commercially available for poor people does, in fact, destroy babies in large numbers. Of this there is ample evidence.

The "infancy" of the whole movement for the protection of infants is well demonstrated by the fact that it is only within the last two or three years that the Government has become awake to the need for considering the health and safety of the unborn child. But to-day work is being undertaken in this direction. Apart from a few isolated infants' hospitals (I think I am safe in stating that the total in the British Isles could be numbered on the fingers of one hand), in addition it may be to maternity wards in workhouse infirmaries, this completes the list of measures available for the prevention of infant mortality and the protection of infant life in this country at present.

INFANTS' FOODS.

I do not recollect finding in the reports of the Local Government Board on Infant Mortality any special reference to the artificial (so-called "patent") babies' foods, many of which used to be, and some of which are still, largely advertised. Neither is there any reference to anything of the kind in the Villiers-le-Duc report. Apparently in the

latter case the need did not arise. Here, again, we have an example of the singular apathy of the "powers that be" with regard to the interests of the infant. It is, of course, a simple and well-known fact in physiology that until the age of five months an infant is unable to digest starches. One would have supposed that it would have been a very serious offence for any person for the sake of profit to attempt to place starch on the market and call it babies' food. One would suppose that there was no special need for advocacy on this point, but it is the case that to-day there is nothing to prevent such action on the part of any person, and this in face of the fact that serious formal representations have been made unavailingly to the Government department concerned, with a view to preventing this abuse, or rather this crime.

Surely it is not too much to ask that an infant be not slowly starved to death by having administered to it a substance which does not nourish it. The mind reels before a contemplation of the number of infants who have been slowly done to death in this horrible fashion in this country during the past 50 years. No words can be too strong in condemnation of the system which permits the interests of commerce to stand in the way of the utter, ruthless uprooting—the total obliteration of this system.

ON THE TREATMENT OF GUNSHOT FRACTURES:

A DESCRIPTION OF APPARATUS AND TECHNIQUE.

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INTRODUCTION.

IN a typical gunshot fracture there are three main characteristics: great comminution with displacement, severe sepsis, and pain which becomes intolerable with movement. A patient with such a fracture is in great danger of losing either life or limb from sepsis or hæmorrhage, and if he escapes these early dangers, recovery of the limb is generally a matter of months, and, unless special precautions are taken, will leave him with a deformed and almost useless member.

Any system of treatment of such fractures must aim at saving both life and limb, and restoring the latter to useful function. In order to do this four things are necessary: (1) Immobilisation of the fractured part for a prolonged period; (2) thorough treatment of the wound, by free drainage and frequent dressings; (3) restoration of the correct line and length to the bone by extension in its axis; (4) maintenance of both wound treatment and extension for a period which may be prolonged to several months. And as accessories to the above two further conditions are desirable: (5) The joints being kept semiflexed, so that the limb is in physiological rest, and the flexor muscles relaxed; (6) massage and movement of the limb from an early period.

The Treatment of Grossly Infected Wounds.

Shell and bomb wounds which are obviously grossly infected should be opened up freely at the earliest possible moment. It is not justifiable to leave such for X ray examination, if this is not immediately available. Large pieces of shell and scraps of clothing can readily be extracted by enlargement of the wound, and it is much more important to do this at once than to wait for radiographic information. For this type of wound there is safety only in *opening early* and *opening freely*. Small punctured and penetrating wounds without evidence of infection are better left alone with a simple dressing until admission into a base hospital.

Treatment of Fragments in a Comminuted Fracture.

However freely the wound is opened up the bone fragments must be left *in situ*. However much the bone is comminuted the fragments are seldom bereft of all vascular supply, and when the wound becomes healthy they will re-form the broken parts. It is only too easy to remove several inches of the shaft of the bone if every movable fragment is seized which can be felt in the wound. Then the limb will be left in a useless condition and, apart from a late grafting operation, nothing can be done to restore it. There are only two exceptions to this rule of not removing fragments of bone: first, when the articular end of a bone is shattered, all loose bone should be removed from the joint; and, second, if a bit of bone is clearly devoid of all vascular connexion and lies in a septic wound it should be taken out.

The Avoidance of Operative Fixation of the Fragments.

It is useless and very dangerous to attempt to plate or wire bone fragments lying in septic wounds. If much comminution exists this will be a mechanical impossibility and if the fracture is not comminuted it is excellently suited for extension treatment. Boring holes in a bone in an infected wound will usually lead to necrosis of that portion of the bone which is fixed by a plate, and though for the moment the patient may be better for the immobilisation he will run a grave risk of losing the limb later.

It is necessary to preface the description of the splints and extension apparatus by these remarks because they involve cardinal principles. Unless a grossly infected wound is opened and drained early and thoroughly, unless the fragments of bone are left in place, and unless unnecessary operative fixation is avoided, no subsequent splint or apparatus will serve to save a useful limb, nor, indeed, will it save the limb or even the life in many cases.

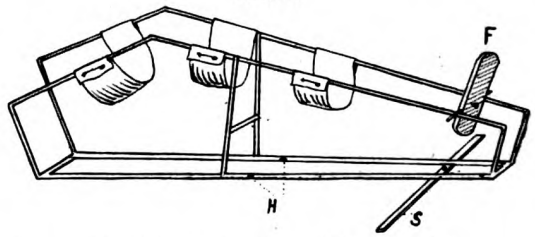
FRACTURES OF THE FEMUR.

1. *In the Early Stages.*

At the clearing station the limb should be put up on the wire-cradle leg-splint, and in all the stages of transport it is to be left on this splint. This is very easy of application, because it merely requires the leg with flexed knee to be laid in it. No bandaging is necessary, except round the foot and leg below the knee when the patient has to be transported. It is comfortable for transport, because the flexed position of the joints prevents all rolling, and there is a cross strut which takes a bearing on the stretcher poles.

The wire-cradle leg-splint, short pattern (Fig. 1).—This consists of a wire frame, fixed on a metal base, with a cross-piece at the lower end, the long end of which is turned towards the sound leg. It is to be used for any fracture of

FIG. 1.



Wire cradle-splint; short pattern. Only three strips are shown, and about four more would be required; F, Foot-piece; H, Holes for fixing extension uprights; S, Cross strut which can be turned with its long end either side.

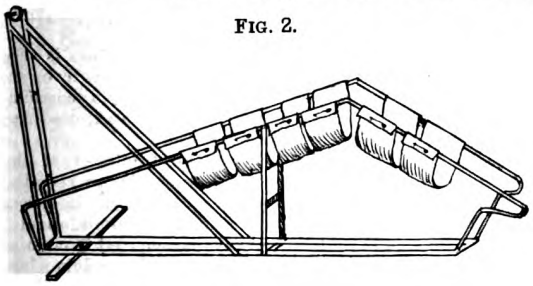
the lower two-thirds of the femur or of the leg below the knee. It is prepared for use by placing slings of rubber or of flannel bandage across from side to side for the whole length of the leg. These slings should be of such a length as to allow the leg to lie with its upper surface on a level with the splint. Rubber slings are used opposite any part which is wounded, and also below the knee. In the former case this is for cleanliness and in the latter to afford an elastic extension of the thigh. The knee is flexed over the elastic band and this will pull upwards away from the hip; this extension sling therefore should be adjusted fairly tightly and covered with a generous pad of wool. The rest of the slings are made of double slips of flannel bandage, secured by safety-pins.

When the splint has been converted into a cradle by the adjustment of the rubber and flannel slings, it is applied simply by raising the leg, keeping traction on the thigh and bending the knee and placing the limb upon the splint, so that the knee lies at the bend of the wire frame. The tension of the slings is then adjusted so that even support is obtained along the whole leg. If the patient has to be moved or is delirious, the foot and leg are bandaged to the splint, but otherwise this is not necessary, because the cradle in which the limb lies, being a double inclined plane, does

not allow of the limb moving from its position. When the wound is dressed the rubber slings are unfastened from the outer bar of the frame and dropped out of the way. Anterior wounds do not require the slings to be moved at all and a posterior wound can be so treated that a sling lies above and below it, so as not to imprison discharges or block the mouth of a drainage-tube.

The wire-cradle leg-splint, long pattern (Fig. 2).—This is exactly like the short pattern in principle, but it is longer. One bar of the wire frame is longer than the other in order to take the longer, outer side of the thigh, and the frame is so bent back at its upper end as to allow the bedpan to be slipped underneath it.

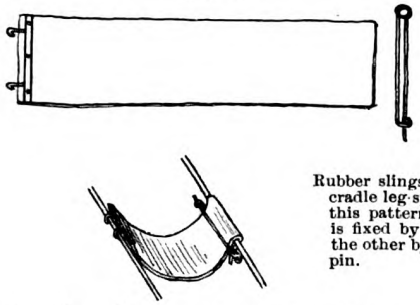
FIG. 2.



Wire-cradle leg-splint; long pattern. The extension uprights are detachable. In a more recent pattern both side bars of this splint are of the same length but they are supported at a higher level, so that the inner one clears the pubes. By this modification the same splint will suit a right or left leg.

The use of rubber slings.—The rubber slings may be made of ordinary rubber bandage, used in double thickness and fastened by a safety-pin. But for the support of the leg it is much better to use the stout rubber, which can be obtained by cutting up unserviceable motor-tyre inner tubes. The disused tyres can be obtained from any ordnance stores.

FIG. 3.



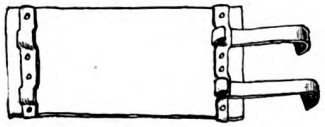
Rubber slings for wire-cradle leg-splints. In this pattern, one end is fixed by hooks and the other by a brooch-pin.

The thick rubber sling may be fixed to the wire frame by turning over each end round the wire and clipping by a brooch-pin made from steel wire, or by hooks made from the ribbon aluminium used in the field fracture cases. Different methods of attachment are shown in Figs. 3 and 4.

2. *In the Later Stages.*

The treatment above described is all that is necessary for the early stages—i.e., for a week or ten days—but when the patient has arrived at a base hospital a more exact and efficient extension is necessary in order to secure the correct length and alignment of the broken femur. The patient is first examined by the X rays. This is done while he lies on the splint, the only alteration necessary being that for the moment the rubber slings near the fracture should be replaced by flannel. Extension is attached to the limb either by means of adhesive plaster or by a transfixion pin. In either case it will be necessary to fix the two metal uprights and pulley wheel to the splint by means of four bolts. The pulley wheel can be adjusted at three different heights in the uprights. (See Fig. 2.)

FIG. 4.



Rubber sling fixed and adjusted by slips of aluminium ribbon which can be bent and cut to any length; these are only shown here at one end of the sling.

Extension by plaster.—The ankle and heel are protected by a layer of wool and a bandage, the leg is shaved and washed with spirit. Zinc oxide adhesive plaster is then fixed to a wooden spreader and attached to the leg as high above the knee as the wound will allow. Circular strips of plaster surround the limb from the ankle to the tubercle of the tibia (the crest of the tibia being protected from pressure by a strip of gauze), and from the upper border of the patella to within a safe margin of the wound. A bandage surrounds the plaster. A cord is taken from the spreader to the pulley placed in the middle hole in the uprights and a 20 lb. weight attached. In this method the slings which support the thigh and knee must be lowered and those under the calf raised, so as to keep the knee almost straight. The foot is supported by the weight in mid-air.

It will often occur that the plaster loosens or slips; this is due to the shrinking of the limb owing to subsidence of inflammatory swelling and to emaciation. In this case it is necessary to re-apply it or to replace it by transfixion. This method is perhaps the best in the early stages of very septic cases. Not only does it avoid transfixion at the stage of infection, but it tides over the first period of treatment and allows transfixion to be postponed until the time when bone union is taking place. It is liable to cause soreness unless very carefully applied, and the direct pull on the almost straight knee is a great disadvantage.

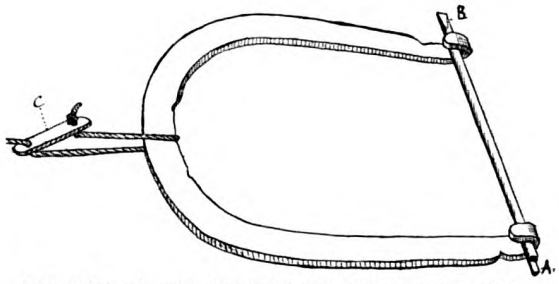
Counter extension.—However extension is applied, counter extension is necessary from the outset, otherwise the patient is pulled down and the splint and the adjustment is disturbed. Counter extension is provided by a well-padded flannel bandage round the sound thigh tied to the head of the bed, and also by raising the foot of the bed on 8-inch blocks.

Transfixion extension.—When the wound has assumed a healthy character it is usually more satisfactory to apply extension by means of a transfixion pin passed through the condyles of the femur or the head of the tibia.

It is wise to use the tibial site of transfixion for all cases in which the fracture is near the knee-joint, and also in those in which there is reason to anticipate a slow progress of union. There is not only less liability to septic ulceration round the pin-holes, but if this does occur it does comparatively little harm, whereas at the lower end of the thigh there is danger of sepsis spreading from the pin-holes into the muscular planes of the thigh or even into the knee-joint.

On the other hand, the femoral site of transfixion has the advantages of pulling directly on the lower fragment and of not interfering with passive movements of the knee during treatment. Transfixion is performed by a plain steel pin $6\frac{1}{2}$ inches long and 3/16th inch thick, with a sharp chisel point at one end and a slot which fits a hand brace at the other. (Fig. 5.) The leg lies in its cradle-splint to which the extension uprights have been bolted and the pulley wheel fixed at the highest position. The lower end of the thigh or the upper end of the tibial region is painted with iodine and the patient is given gas in bed. An assistant stands on the outer side of the patient and steadies the limb, and pulls the skin upwards towards the fracture. The surgeon drives the pin into the limb either at the upper part of the internal condyle or into the inner tuberosity of the tibia just above the level of the tubercle. The pin cuts its own way into the skin and through the outer shell of bone propelled by a firm jerk, and then the pin is driven through the bone by rotation of the brace and cuts its way out of the skin on the farther side. In this way the holes made in the

FIG. 5.



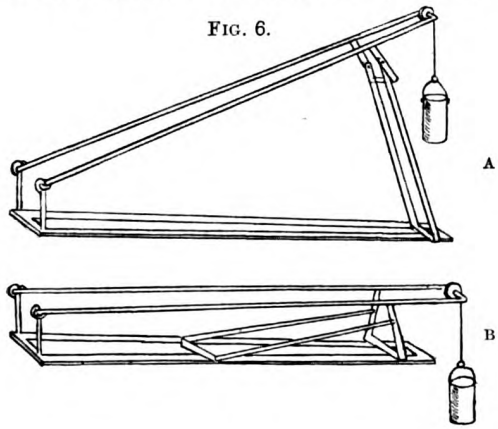
Transfixion pin with horse-shoe claw and extension cord; A, Slotted end of pin to fit brace; B, Chisel point of pin; C, Tightening stay.

skin by the pin are just large enough to take the pin and leave no open wounds. The spots of entry and exit are covered with pads of dry gauze and a bandage. The projecting ends of the pin are grasped by a metal horseshoe, by which a cord is fixed over the pulley to a weight of 15 lb. (Fig. 5.) The transfixion pin is left in place for a period of from four to eight weeks. The shorter time is usually sufficient when the fracture is in the lower third of the femur and in the absence of retarding suppuration. The longer period may be used in tibial transfixion. If firm union has not occurred at the end of six weeks in the femoral transfixion or after eight weeks of tibial, adhesive plaster may be applied for a further period after its removal, but this is not often necessary. The progress of union may be judged both by the X rays and the absence of pain at the site of the fracture on removal of the weight.

Massage and movements.—In the majority of cases, and all in which the wound is doing well, the whole of the limb apart from the wounded area is massaged from the end of the first week until the patient is able to walk; from the end of the second week the knee-joint is moved gently once a day from extreme extension to a flexion of 45 degrees and the ankle has all its movements imparted to it.

The hinged wire-cradle leg-splint.—There is one objection to the elevated position of the thigh in the treatment of septic fractures of the femur. In some cases the suppuration tends to track towards the hip. This is usually the result of the wound not having been thoroughly opened or of proper drainage not having been provided. If this tendency is observed and cannot be checked by proper drainage, the case should be treated by a hinged splint which, whilst keeping the limb horizontal, allows of it being elevated for dressing without disturbing the extension. This hinged splint (Fig. 6) consists of a stout wire frame which lies on each side

FIG. 6.



Hinged leg-splint; A, Raised position for dressing; B, Horizontal position to avoid upward tracking. In a more recent model of this splint there are two improvements. The upper ends are supported on curved instead of straight uprights, the curve being a quadrant with a 6-inch radius. This serves to allow clearance for the bed-pan. The lower end of the movable frame is bent upwards and there are two pulley wheels, the upper one to take the pull direct from the femur and the lower one to take a pull by adhesive plaster through the leg and foot.

of the leg, hinged to a metal base. The frame-work carries a pulley-wheel on the cross-piece below the foot. A swinging strut serves to support the frame when the latter is elevated to 45 degrees. In order to apply this splint, either adhesive plaster or a transfixion pin is necessary for the attachment of extension. If a pin is used, then instead of a horse-shoe attachment between the cord and the pin, two cords are brought down each side of the leg from the ends of the pin and fixed to a cross-piece of wood or metal which lies below the sole of the foot, and to which the weight is attached by a third cord. If adhesive plaster is used then a foot-piece (see below) is used as a spreader and the weight is attached to this. When an attachment for the weight has been provided by one of these means the splint is converted into a sling in the same way as the other pattern by the use of flannel or rubber strips, these being adjusted so as to allow the back of the thigh to rest at the level of the bed. The limb is placed in the cradle thus made for it, the upper or hinged ends being placed as high as the perineum will allow, the inner end being protected by padding; counter extension is provided, as before, by a perineal band round the sound thigh. When the dressing is done the frame cradle is raised to an angle of 45 degrees and the strut swings into place. Then the whole of the back of the thigh is accessible when the slings are removed, the tension of the weight serving to keep the bones in position.

It might be thought that the purpose of this splint would be equally well served by simply keeping the limb lying on the bed with a weight over a pulley at the lower end, but when such a limb is lifted without mechanical aid it is found quite impossible to hold it at a sufficient elevation and without varying the tension, and the cardinal principle of immobilisation is violated daily.

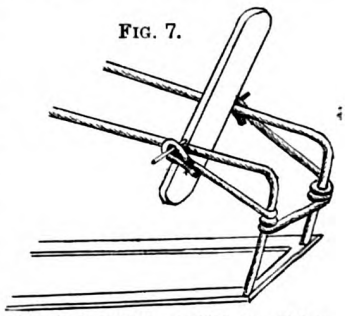
I have found in many bad cases where suppuration is very slow in clearing up that it is very convenient to begin by six weeks' transfixion extension on a double inclined plane cradle-splint, and then to attach adhesive plaster and continue with the hinged splint until union is complete.

On the necessity for abduction.—In all fractures of the upper part of the femur it is absolutely essential to keep the thigh abducted, because otherwise adduction of the lower fragment will be brought about with consequent angular deformity. This abduction will always be secured if counter extension is made from the sound side of the pelvis while extension is maintained on the injured leg. It is necessary to point this out, because both the patients and nurses are liable to leave off the perineal counter extension, and if the elevation of the bed alone is used to prevent the weight pulling the patient down, abduction is not secured.

FRACTURES OF THE TIBIA AND FIBULA.

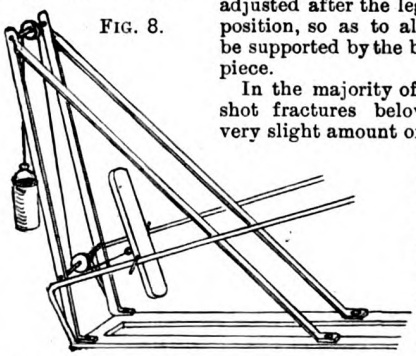
If there is much comminution with large discharging wounds, it is just as necessary to elevate the leg from the bed as in fractures of the thigh. The short pattern leg cradle-splint above described and figured is to be used. (Fig. 1.) Above the knee in the thigh portion one or two stout rubber slings are placed. The lower end of the thigh is protected from pressure on the hamstring tendons by suitable padding. These rubber slings serve as an elastic counter extension. A foot-piece with a cross metal bar which slides on the frame is fixed to the leg. This is done preferably by adhesive plaster running up the sides of the leg, the ankle and heel being properly protected by wool and bandage. But if the wound is too low down for this, then the foot-piece must be bandaged on to the foot by a starch bandage, the dorsum of the foot being well protected by padding. The leg part of the splint is provided with slings, either of rubber or flannel, the length of these being adjusted after the leg is placed into position, so as to allow the foot to be supported by the bars of the foot-piece.

FIG. 7.



Elastic extension, applied by rubber tube to the foot-piece.

FIG. 8.



Weight extension, applied to the foot-piece. In a more recent pattern of the short leg cradle splint there is provided a slot at the lower end into which a cross rod bearing a pulley can be fitted. This provides for weight extension without necessitating the special uprights.

In the majority of cases of gunshot fractures below the knee a very slight amount of extension will prevent or correct overlapping of the bones if the limb is kept in this position, which, by reason of the flexion of the knee and the extension of the ankle, relaxes the calf muscles. This extension is brought about by a piece of rubber tubing half an inch thick and about 12 inches long, each end of which is tied into a loop by string binding. The tube is passed across the uprights of the wire

cradle (not the extension uprights, which are not necessary) and wound round these two or three times and the ends looped over the outstanding bars of the foot-piece. (Fig. 7.)

In cases where this extension is not sufficient the extension uprights are fixed to the splint, the pulley placed in the lowest position, and weight applied to the foot-piece. (Fig. 8.)

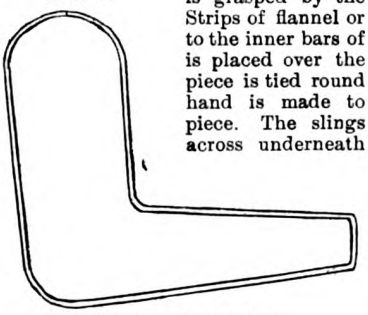
In cases of some long standing when much overlapping has occurred and certain closed fractures with much muscle spasm, it may be necessary to use some form of transfixion. The best site for this is the malleolar region or the os calcis and the pin 4 inches long and ⅛ inch thick is used. To this a 10 lb. weight is attached, and very soon serves to correct the displacement.

FRACTURES OF THE ARM.

In many arm fractures there is nothing like the same urgency for special apparatus as in the case of the leg, and very often, though the fracture is comminuted, there is very little real displacement or loss of continuity. But if the limb is severely shattered exactly the same principles must be observed, as have been detailed above.

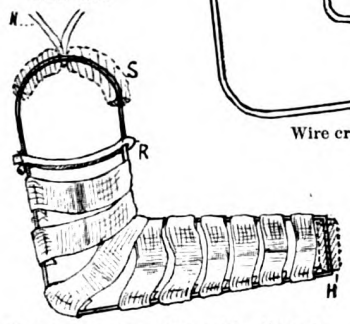
The wire cradle-splint (Figs. 9, 10).—This splint, shaped like a capital letter L, is made of ¼-inch steel wire, rounded at the top where it lies over the shoulder. This part and the small cross-piece at the lower end, which is grasped by the hand, are padded. Strips of flannel or rubber are attached to the inner bars of the splint, and it is placed over the arm. The shoulder-piece is tied round the neck and the hand is made to grasp the hand-piece. The slings are then brought across underneath the arm and pinned to the outer bar. It is often convenient to use a single broad sling for the unwounded part of the limb. For example, if the humerus is fractured the whole forearm may be slung in one sheet of lint and separate rubber slings used for the upper arm. The uppermost strip, which lies in the axilla, is formed of a double drainage-tube which can be lightly padded. In bad cases, when the patient is in bed, the whole limb is slung to a bar at the side of or across the bed, where it can be submitted to constant irrigation.

FIG. 9.



Wire cradle arm-splint.

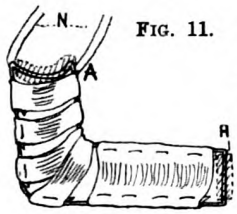
FIG. 10.



Wire cradle arm-splint with slings in position. N, Bandage round neck; S, Padding over shoulder; H, Padding for hand; R, Rubber under axilla.

The arm-cradle with axillary bar (Fig. 11).—It is sometimes more convenient to have the upper end of the splint in the axilla instead of over the shoulder. The cradle-splint can be given this form by bending the upper rounded part at right angles to the arm-piece; when so bent the splint will form an inside angular splint for one arm or an outside angular splint for the other.

FIG. 11.



Wire cradle arm-splint. Upper end bent into axilla; N, Bandage round neck; A, Padded bar in axilla; H, Pad in the hand.

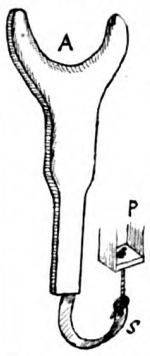
Extension either of the humerus or forearm can be provided for in this splint as follows. For the humerus, by bending the upper end into the axilla and padding the same, and then passing a rubber bandage across the flexor aspect of the forearm and the outer bar of the lower portion of the splint for several turns.

For extension of the forearm the hand must be firmly bandaged to the hand-piece, and the arm drawn back to the outer bar of the splint by a rubber bandage passing across the front of the biceps.

Special Extension Arm-splints.

In those cases where the wounds are less severe and in which much displacement of the bone exists, it is necessary to use some form of constant extension in order to obtain correct length and alignment of the broken bones. This is arranged for in the splints described below by means of a ?-shaped steel spring, capable of keeping up a constant tension of 5 to 8 lb. (when the tip of the spring is displaced one inch towards the shaft there is a tension of 7 lb.).

FIG. 12.



Humerus extension splint, wooden pattern; A, Padded crutch for axilla; P, Adhesive plaster attached to arm; S, Spring to give a 5 lb. pull.

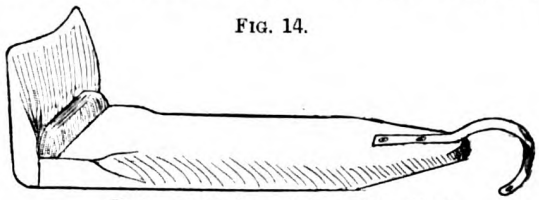
The humerus extension splint. — The body of this is made either of wood or metal. It consists of a Y-shaped piece, the upper part of which is well padded and placed in the axilla. (Figs. 12, 13.) Adhesive plaster is fixed to the arm below the wound and to a wooden spreader which lies just below the elbow. From this a cord hangs down. The splint is placed in the axilla and the extension cord is passed through the hole in the spring. The latter is pulled towards the elbow with a tension of 5 lb., and the cord is then tied in this position. No bandage is necessary to keep the splint in position. Every third day the splint is taken off, by merely unknotting the extension cord, and the axilla is rubbed with spirit and dusted with powder.

FIG. 13.



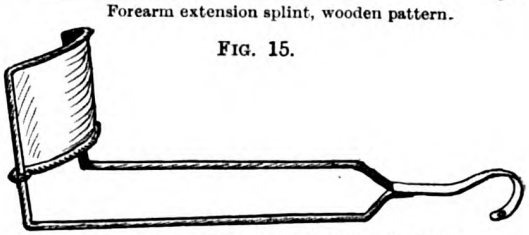
Humerus extension splint, metal adjustable pattern.

FIG. 14.



Forearm extension splint, wooden pattern.

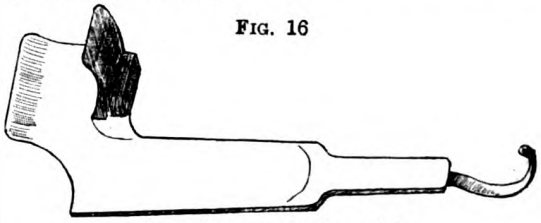
FIG. 15.



Anterior angular extension splint, metal pattern.

Forearm extension splint (Figs. 14, 15): *Anterior angular pattern.*—This, too, is made either in wood or as a wire frame, shaped like an anterior angular splint bearing the ? spring at its lower end. The metal frame splint is much better than the wood for cases which have large wounds in the forearm, and also because the fingers are not imprisoned against the splint.

FIG. 16

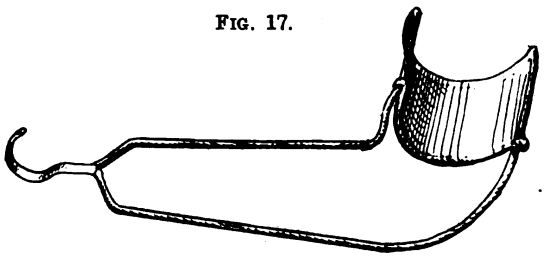


Antero-internal extension splint.

Internal angular forearm splints (Figs. 16, 17).—In some cases, especially where the wound is near the elbow-joint, the

splint is more conveniently arranged as an internal angular pattern, with a piece coming forward in front of the biceps

FIG. 17.

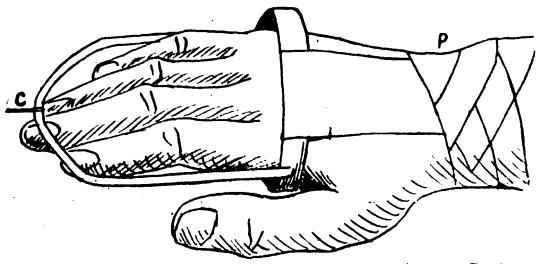


Antero-internal angular extension splint, metal pattern.

for counter extension. This antero-internal angular splint is also made in wood or as a wire frame.

Attachment of adhesive plaster to the forearm.—If adhesive plaster be taken along the flexor and extensor surfaces of the forearm and fingers, the latter being held rigid in full extension become stiff and painful and the flexor muscles are kept in full tension. To avoid this a hand-piece (Fig. 18)

FIG. 18.



Hand-piece for attachment of extension to forearm; C, Cord to be tied to spring; P, Adhesive plaster.

is used for attachment of the strapping. This consists of a flat aluminium band which surrounds the palm of the hand inside the thumb, and to this the extension plaster is fixed. A ∩-shaped wire goes from one side of the flat band to the other crossing the fingers at their lower joints. To this wire the extension cord is tied and the cord is knotted into the hole in the extension spring.

The appliances described in this article are made by Messrs. Down Brothers, London; Messrs. Ferris and Co., Bristol; and Messrs. Young and Co., Edinburgh. They can be obtained also by Royal Army Medical Corps officers from the Central Splint Factory, Alexandria.

SOME PERFORATIONS AT OR NEAR THE PYLORUS.[1]

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THE presence in the wards of a woman who has undergone treatment for perforation of a chronic ulcer near the pylorus provides an opportunity of considering some of the problems presented by such cases. During the past few months the imperative demands of the military side of the hospital have not relieved us of our duty to civilian patients, and several of these abdominal catastrophes have been admitted during that time. The guiding principles in the management of gastric and duodenal perforations are in the main generally recognised, but details must vary according to the time elapsed since perforation, the position and size of the ulcer, the extent of the induration surrounding it, and the amount of contraction following the partial improvement which may have attended nature's unsuccessful attempts at a cure. These statements are more especially true when the ulcer is at or near the pylorus.

In the first case the diagnosis was made and operation performed within two hours of perforation. The operation was done through a planned epigastric incision, which was closed in layers, and has left a firm abdominal wall. No drainage was necessary and recovery was uneventful.

[1] A paper founded upon some clinical lectures delivered at St. Thomas's Hospital.

CASE 1. *Perforation of duodenal ulcer; operation within two hours; no drainage.*—A married woman, aged 26, was admitted to St. Thomas's Hospital on Oct. 26th, 1915, with an attack of acute abdominal pain commencing an hour before. She had not vomited, but the pain had been so severe that she had fainted twice. Indigestion had existed for five years, and three years ago she was in this hospital for two months complaining of pain after food and vomiting. Since then she had been comparatively well until August last, when the same symptoms returned and she had been obliged to take to her bed. As solid food caused much pain she was avoiding it as much as possible, and on the day of admission had only taken milk and soda-water. The pain complained of had commenced suddenly when she was lying down and was lower than usual, in the region of the umbilicus, but was not referred to either side.

The patient, a thin woman, was pale and perspiring, with quick and shallow respirations, temperature 98° F., and pulse 140. The abdomen was very rigid, not markedly distended, and moved very little with respiration. There was great tenderness in the epigastric and umbilical regions, whilst dullness was present on percussion in the epigastric region and in the flanks, but this was not extensive. There was some diminution of the liver dullness. Operation was performed two hours after the perforation had occurred.

A free epigastric incision, with displacement of the left rectus outwards, was made. On reaching the peritoneum it bulged forward, and incision gave exit to much gas and a small quantity of fluid. The stomach was dilated and prolapsed. A circular, clean-cut perforation of the size of a sixpenny-bit was found on the anterior and upper surface of the duodenum in its first part. Around it was an area of induration about as large as a penny, and beyond that a circular brown ring, apparently the result of a recent hæmorrhage. Sutures of No. 2 silk were used, a fold of the stomach being drawn across the opening and secured. The peritoneum was washed out with saline, and the incision through the abdominal wall closed in layers. The amount of free fluid was not large, and no suprapubic drainage was required. For a time she had irregular pains about the abdomen and continued pale, but was apparently quite well and taking ordinary food when she left hospital on Nov. 20th. The question of the immediate performance of gastro-enterostomy was considered, but negatived by the anæsthetist owing to the amount of shock shown. Up to the present she has developed no symptoms of pyloric obstruction.

The next case presented more difficulty in diagnosis and in the local management of the perforations.

CASE 2. *Subacute perforation with extensive induration; gastro-enterostomy; drainage through epigastric incision.*—A single woman, aged 28, admitted to St. Thomas's Hospital on Jan. 18th, 1916, stated that she had been awakened in the early morning of the 16th by pain in the upper abdomen, and had vomited. On the 17th she still had the pain, and was kept in bed without food. Not being better on the 18th she was sent to the hospital. On admission she looked ill, but did not appear to be suffering from shock. The abdomen moved poorly on respiration, and deep inspiration caused pain. Tenderness on pressure was present on the right side, chiefly over the upper part of the right rectus; towards the epigastric region this was very marked. On percussion there was an increased amount of dullness over the part corresponding to the area of greatest tenderness. This was continuous with the liver dullness. The resonance in the flanks was impaired, but there was no dullness over the pubes or evidence of much fluid. Pulse 120; temperature 100·6° F.

Operation was performed at 2 P.M. A mesial epigastric incision was made, and the subperitoneal tissue was found in an œdematous condition. Some gas and greenish fluid escaped on incising the thickened peritoneum. When an adherent stomach had been pushed back from the liver, more greenish, turbid fluid escaped, but no ulcer could be seen. The anterior surface of the stomach and duodenum over a circle about 2 inches across had been adherent to the under surface of the liver and peritoneum below it, but posteriorly this adhesion had been broken down, so that some fluid had escaped into the right kidney pouch. The stomach surface involved was irregularly covered with yellow lymph patches, and one of these patches concealed a perforation about the size of a pea, with sharply cut edges. The stomach, lying high and not much distended, had rather thick walls, but the area of induration was not only very rigid, but would not hold unusually thick sutures. A silk suture was passed across the ulcer from side to side, deeply in firm tissue and tied without infolding of peritoneum. Thick catgut stitches were put in, but these were distance sutures to form an extra method of support for the silk suture placed across the ulcer. The peritoneum was cleansed with a gauze sponge; nearly all the greenish fluid was in the right kidney pouch and behind the liver; none was found on the left side or in the pelvis. The transverse mesocolon was opened with the intention of

doing a posterior gastro-enterostomy, but the lesser pouch was almost obliterated by old adhesions, whilst the thickening of the base of the ulcer extended over a large surface of the posterior wall towards the middle of the stomach. An anterior gastro-enterostomy was therefore performed. A gauze plug was packed round the sutured part of the stomach between it and the liver, the end being brought outside below a moderate-sized drainage-tube which passed to the ulcer. The remainder of the incision was closed.

The plug was kept in for two days, the tube for eight days. There was a little discharge from the wound of offensive fluid, smelling of gastric juice, which irritated the skin around, but at the time the tube was removed it was purulent and no longer irritating. The temperature became normal in three days' time, and she was sent to the Schiff Home on Feb. 1st. When seen there on Feb. 22nd she was in excellent health, being able to take food like the other patients without any discomfort. She had gained much in weight.

With a history of prolonged stomach trouble, it was evident that the patient had suffered from a gastric ulcer, and the sudden pain, vomiting, and shock made it probable that the ulcer had given way into the peritoneum two days before admission. It was a little difficult to reconcile this opinion with the condition of the abdomen, because there should have been evidence of more free fluid present. Even a small leaking perforation will almost fill the peritoneum in two days.[2] The dull area with its great tenderness suggested a localised inflammation between the stomach and the liver, but did not quite explain the severity of the peritonism. There can, however, be little doubt that the more acute symptoms were the result of sudden escape of fluid which had accumulated between the stomach and the liver. The stomach wall had then become apposed to the liver and the escape of more of its contents impeded; this had been assisted by the large flake of adherent lymph which concealed the perforation.

The main interest in the case arose from the difficulty experienced in dealing adequately with the perforation, as the extensive induration surrounding it made the use of a fold of the stomach wall quite out of the question. The placing of the suture across the perforation, at some distance from the edges of the opening, enabled us to limit very considerably the escape of gastric juice, whilst the "distance" sutures of catgut prevented tension on it for some hours. The operation of gastro-jejunostomy was required for the relief of the obstruction caused by the disease about the pylorus. It was also required to help in the preservation of the sutures. It carried away most of the gastric juice by an easier route than the one over the ulcer, diminished tension, and enabled us to feed the patient at an earlier date. The amount of fluid which did escape from the wound was quite small.

In all cases the importance of accurate suturing is apparent, and the weakened part must be able to withstand strain from vomiting, coughing, or pressure from distension of the stomach. Should one or more sutures fail and leakage occur after an abdominal incision has been closed and the patient put back to bed, death will ensue from peritonitis within a few hours. If by some rare chance the escaping gastric juice is prevented from a general diffusion, there is a possibility of recovery, but the fistula which results leads to a rapid dehydration of the patient with remarkable emaciation, quite as startling as that resulting from partial strangulation of the stomach[3] in a diaphragmatic hernia. Recovery from this fistula is so rare that the account of such a condition is of interest.

CASE 3. *Perforation of duodenal ulcer; giving way of sutures; formation of fistula; anterior gastro-jejunostomy.*—A police constable, aged 35, was admitted on Dec. 26th, 1914, with a duodenal fistula. He was very ill and unable to answer questions, but it was ascertained from others that he had been admitted to a cottage hospital for duodenal perforation which had been closed by operation on Dec. 11th. His divisional surgeon reported that the man had been under treatment for nearly a year with duodenal ulcer and he appeared to be progressing well until two days before the operation, when he was taken suddenly ill. "At the operation the ulcer was stitched. Up to a point he did well, but the ulcer broke down again, and I think must have entered the transverse colon. The gastric juice passing into the colon gave him diarrhœa which nothing stopped, and anything taken by the stomach intensified it. He was going down hill rapidly. ..... He was practically dying on two occasions. On the 21st the wound gave way and a watery fluid poured out; subsequently food taken by the mouth appeared at the wound unchanged. He had lost flesh with startling rapidity."

Some months before this (July, 1913) he had been under treatment in hospital for dyspepsia, symptoms of which had been present for about a year. Examination with the X rays showed no abnormality at that time.

The patient was a big man who had become extremely emaciated. He appeared very ill, the cheeks were hollow and flushed, the eyes sunken, lips and tongue dry. His weakness was so extreme that he could not turn in bed without assistance, and could hardly speak louder than a whisper. The abdomen was much sunken, the bony prominences were clearly visible, and the whole was a boat-shaped hollow with the umbilicus the lowest point. There was the mark of a recent incision in the epigastric region to the right of the middle line and another at right angles to it running to the right. The vertical wound had healed while the latter was opened up sufficiently to admit the little finger, and a watery, bile-stained fluid flowed from it, which smelt of gastric juice. The skin around was very raw and red for a considerable distance, especially towards the umbilicus, where this fluid had mostly spread as the recumbent position had been usually maintained. He was stated to have lost some 4 st. or more in weight during the fortnight. He was, in fact, almost dried up for want of fluids and nourishment. Pulse 120, weak and small; respiration 20; temperature 98·8° F. He had bedsores over the sacrum.

His general condition was much improved by the administration of saline solution continuously per rectum, so that it was possible to perform the operation of gastro-enterostomy on the following day. An incision was made to the left of the mid-line, at the margin of the excoriated area, and the left rectus muscle drawn outwards. The parietal peritoneum was very firmly adherent to the stomach towards the pylorus. Some of the adherent anterior wall of the stomach was cleared by the separation of recent adhesions until a space of adequate size for the anastomosis was prepared. The operation was performed by the anterior method as it was necessary to be quick and produce as little disturbance as possible. Saline was given subcutaneously during the operation, and a pint of it left in the peritoneal cavity.

By Jan. 11th the watery discharge had ceased and been succeeded by a purulent one of no great amount. He was still very weak and thin, his progress having been hindered by an attack of subacute inflammation of the lung. This attack passed away in about 10 days and he made more rapid progress, but it was a long time before the bedsores healed. He was, however, in very fair health when he left the hospital on March 11th. Even then his weight was only 9 st. 7 lb., although he was over 6 ft. in height. The closure of the fistula appeared to be hastened and his state rendered more comfortable by placing him on his left side during the earlier after-treatment. Plugs soaked in a solution of carbonate of soda were lightly packed in the fistula.

Case 4 represents the most common clinical type as seen after perforation of one of these ulcers when the patient has not come under care early and events have progressed to a more serious extent. The shock of the original peritonism is still evident or the patient may be in a state of collapse, whilst the progressive diffusion of the stomach contents in the peritoneum is an increasing danger. Operation usually saves the patient, but a more prolonged and extensive procedure followed by drainage of the pelvis is required; whilst he is exposed to greater risks during convalescence, especially from pneumonia and subdiaphragmatic abscess. There is sometimes a "period of repose" after the first severity of the symptoms has passed, but operation must not be postponed under an impression that the patient may recover. Free fluid in the flanks as indicated by shifting dullness should warn against such a fatal error. I have seen some distressing results of this "wait and see" policy.

CASE 4. *Perforation of duodenal ulcer; operation; drainage; secondary gastro-jejunostomy.*—A clerk, aged 41, was admitted to St. Thomas's Hospital on Sept. 3rd, 1915, with acute abdominal symptoms of 24 hours' duration. He stated that about three and a half years before he began to suffer from stomach trouble, and on one occasion vomited blood. His chief symptoms were pain after food and flatulence. For nearly the whole of this time he had been placed on a diet of milk. For six weeks he had been much better and free from pain, so that his doctor had allowed solid food. On the evening of Sept. 2nd, when feeling very much better, he was suddenly seized with agonising pain in the stomach region and became weak and collapsed. On admission he was still suffering from shock and severe epigastric pain, whilst his face was pale, cold, and sweating. Pulse 120, very feeble; respiration difficult and slow; temperature 98° F. The abdomen was not moving well, was

[2] The Acute Abdomen, second edition, p. 157.
[3] Ibid.

very rigid, and generally very tender. There was much dullness in the flanks due to shifting fluid.

A median epigastric incision evacuated a large quantity of sour-smelling fluid containing flakes of lymph, but no food particles. Another incision was made above the pubes and a large tube passed into the pelvis, which was full of fluid. The stomach, which was large and much distended, was brought to the surface and a perforation, big enough to admit the index finger, found on the anterior surface of the first part of the duodenum. A tube was passed through this and the stomach emptied; it was not easily passed as the pylorus was much contracted. A double row of No. 2 silk sutures (interrupted Lembert) was inserted to close the perforation, a fold from the stomach wall having been brought across and the peritoneum thoroughly flushed with saline solution. The upper wound was closed and the drainage-tube left in the suprapubic opening. The question of gastro-enterostomy was considered, but the bad state of the patient was against any prolongation of the operation.

On the 9th he was taking solid food, but suffered from flatulence. By the 20th his wounds were quite healed, but he complained more of flatulence and pain after eating anything. No improvement in this respect followed dieting, so it was thought best to do a gastro-enterostomy considering the small size of the pylorus as demonstrated at the operation. On the 24th posterior gastro-enterostomy by the method of Mayo was performed. The region of the perforation looked normal and was without adhesions; no trace of the sutures was seen.

By the 28th he was taking some solid food, and he left the hospital on Oct. 11th, 1915, feeling well but looking somewhat anæmic. He had gained considerably in weight.

In Case 2 the additional operation of gastro-enterostomy was imperative at the time the perforation was sutured; the local conditions necessitated it. Luckily her general state permitted of its performance without adding unduly to the risk. In nearly every instance of perforation of duodenal ulcer, or of ulcer situated at the pyloric end of the stomach, this operation must be considered. In the larger number it is contra-indicated by the state of the patient, who is already suffering as much as he can bear without any addition which is not imperative. In most the operation would have to be an anterior operation, for to open up to infection areas which would not otherwise be exposed would appreciably increase the risk of complications. Usually it is much better for the patient to undergo a gastro-enterostomy by the posterior method at a later date if symptoms of pyloric obstruction arise. In addition, there is a danger of the formation after an uncertain period of time of a jejunal ulcer when the anterior method has been employed. This sequence of events is illustrated by the next case.

CASE 5. *Perforation of jejunal ulcer eight years after anterior gastro-jejunostomy; suture.*—A man, aged 60, was admitted to City Ward on March 15th, 1915, complaining of abdominal distress. His history was that eight years before he had undergone operation in St. Thomas's Hospital for perforated gastric ulcer; six weeks later the surgeon had done an anterior gastro-jejunostomy because of pyloric obstruction. Since the second operation the patient had been quite well until 3.30 P.M. of the day of admission, when he was seized with violent pain in the pit of the stomach, especially on the left side. He vomited three times and felt very ill. He came to the hospital because he thought "something had given way" again. The man looked ill and was in extreme pain. The abdomen moved very little on respiration, was rigid, and a distinct dull area was revealed on percussion, extending down the left side from the level of the hepatic flexure to the anterior superior spine of the ilium. His tongue was coated; pulse, 120; temperature, 100° F.

At the operation six hours after the onset of his illness an incision was made through the upper part of the left rectus. Some turbid fluid immediately escaped. The perforation, which was situated just beyond the line of the anastomosis, had been drawn high up with the stomach. Its position was indicated by the flow of brownish fluid, mixed with small bubbles of gas. It was apparently in the ante-mesenteric border of the gut and admitted the end of a pair of Spencer-Wells's forceps. The gut below was distended and reddened, and there were some flakes of lymph around the perforation. It was closed with two layers of Lembert silk sutures, the second burying the first. The whole abdomen was irrigated with saline, one or two old adhesions clamped and divided, and the wound closed in layers. Recovery was uneventful.

This case taken by itself would perhaps not be of very much value, but the instances of jejunal ulceration following the anterior operation as compared with the posterior are so numerous that the danger cannot be ignored. This is the fifth perforation of a jejunal ulcer after anterior gastro-enterostomy that has been under my care; luckily they have all come under treatment early and recovered. In one patient the tendency to jejunal trouble has been very marked. She had perforation of a gastric ulcer in 1903; operation for pyloric obstruction in 1904 (anterior gastro-jejunostomy); suture of perforated jejunal ulcer in 1905; suture of another perforation in the jejunum in 1906. In September, 1915, she had hæmorrhage from the bowel with some tenderness in the epigastrium and again in February of this year. Otherwise her health has been good, she looks well, has a sound abdominal wall, and lives an active life.

(It may be added that Case 3 since I described it in a lecture has been successfully operated on by Mr. Adams for acute perforation of a jejunal ulcer. This occurrence helps to accentuate the importance of these remarks.)

The sutures in duodenal perforations should be passed by Lembert's method in the direction of the long axis of the duodenum, so that further diminution of the passage may not be induced. If they do not hold in the tissue immediately around the perforation, it may be possible to bring a fold of the adjacent stomach wall across and fix it in position.[4] This method has been proved most useful in more than one instance and its result was seen three weeks later in Case 4. No trace of the suturing remained. The absence of any evidence of former mischief is sometimes remarkable when the abdomen is opened in later life. In Case 5, where a perforation had been sutured and secondary gastro-jejunostomy performed eight years before, there were only a few isolated adhesions. In another man for whom a secondary gastro-enterostomy was recently performed for pyloric obstruction 12 months after suture of a duodenal perforation in another hospital, there were extensive omental adhesions to the anterior abdominal wall. In neither of these men did there remain a trace of the perforation, and the peritoneum covering the duodenum appeared normal.

Case 2 gives an example of a different method of closing a perforation and also shows the importance of gastro-jejunostomy in such cases. It may be possible to secure the perforation by suturing liver or omentum over it, but the insertion of a plug, which would certainly come away in a few hours, leaving a larger opening, does not commend itself; if tried without the performance of a gastro-enterostomy recovery would be most unlikely.

The diagnosis of these perforations cannot be considered here. It is indicated by the records of the cases already given, and will vary according to the stage of the illness which has been reached when the patient presents himself. There is often a close resemblance between the perforation of a duodenal ulcer and the commencement of an acute appendicitis. The very sudden onset in any acute abdominal condition where this difficulty is found should be regarded as pointing to duodenal perforation, although the pain when the patient is seen may be referred to the right lower abdomen.

In a patient, aged 66, seen with Dr. A. Grayling on April 9th of last year the sudden pain occurred as he entered a room in his house dressed ready to go out to dinner. Operation within 24 hours showed a chronic ulcer in the first part of the duodenum which had caused no symptoms giving rise to any suspicion of its existence before perforation occurred. There had been slight evidence of gastric dilatation and some complaint of flatulence. In this case the pain was in the right lower quadrant of the abdomen and was followed by vomiting. There was much free gas in the peritoneum as well as free fluid. Recovery followed closure of the perforation with No. 2 silk (No. 1 cut out) and drainage of both subhepatic region and pelvis.

In another case seen with Dr. C. D. Green on Oct. 26th, 1915, symptoms due to duodenal ulcer had been present for years, but for some time he had considered himself cured. This patient, aged 50, had a sudden seizure of epigastric pain at 11 P.M. accompanied by much shock. He was sent into a cottage hospital and we operated within 12 hours. He was then recovering from shock, but was in great pain. The abdomen, which was very rigid and contained much fluid, was not distended. No. 2 silk was used to close the perforation, the peritoneum washed out, the upper wound closed, and drainage from a suprapubic opening employed. When seen some fortnight later he had no symptoms of duodenal obstruction.

[4] Ibid., p. 160.

Mr. Arthur Du Cros, M.P. for Hastings, has promised a gift of £7000 to the Extension Fund of the London (Royal Free Hospital) School of Medicine for Women, thus completing the £30,000 for which appeal was made.

ON PNEUMOCOCCAL BRONCHITIS.

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IN the past year or two there has occasionally come under my notice a youth of somewhat degenerate development who at some prior period has suffered from pneumonia, or may be an empyema, below the root of the left lung. This has left behind it a patch of solid or condensed lung with a cavity within it from which there occasionally comes a small hæmorrhage, the youth being otherwise healthy. Not inclined to studious habits, it is very desirable that he should become familiar with some suitable outdoor occupation, and that in so doing he should live with some family away from his home. But in such a case there is always this preliminary difficulty. Has he got consumption? If so, A or B, otherwise willing, refuse to have him. That point settled, more or less satisfactorily, there comes another. Is his disease contagious? It is this question, a much more searching one than the other, that makes one pause and think, and induces me to put pen to paper.

So far as I myself personally am concerned I give an unqualified No to both the above questions. He has *not* consumption, and he is not contagious, using that term in its amplest meaning. But I am not writing to air my own opinions, I am simply bent on laying bare the thoughts that pass through my mind when bacteriological questions such as these come up before me, and necessarily this is frequently so. Personally I should have no objection to live with any case of tubercular phthisis, because I am convinced that all experience teaches that provided the observance of the most elementary rudiments of cleanliness and sanitation there is very little risk attached to doing so. The infectivity of tuberculosis, whatever be its nature, is of a low order.

Many years ago, when the bacillary constitution of tubercular foci had but recently come to our knowledge, I wrote an article in the *Medical Magazine*—now, I believe, defunct—the burden of which was "Don't spit." If people are so uncleanly as to spit all over the place, or if smokers, as seems to me their common practice, close up all but the smallest cranny in a railway-carriage when they begin to smoke, I am open-minded enough to believe that many things may be "caught" and even that all sorts of intensive cultivations may go on, and very swedes and mangolds of disease come out of radishes. But given ordinary care and cleanliness, one may live with the tuberculous without risk of infection. But this youth has not tuberculosis—the expectoration has been examined many times and the tubercle bacillus has never been found, and, moreover, the position of the disease is quite against any such assumption, the mischief in the lung is basal. No doubt there are signs of a good-sized cavity, but that is of no great weight, because it is certain time and again from post-mortem demonstration that what has been thought to be a cavity of considerable size during life may be shown to be no more than a bronchial tube dilated to but moderate dimensions, perhaps with some condensation of tissue round it, when one is in the presence of the actual conditions.

But the question that I have put brought to my mind a series of cases that I collected gradually some years ago, and have had by me a long time, where people have been sent to me suspiciously phthisical and yet have proved to be pneumococcal only, or at any rate infected by some other than the tubercular germ, and I may add that it is my conviction that with this knowledge well in mind it is generally possible to distinguish between the two conditions and to say beforehand with tolerable accuracy which of the two will be found upon bacteriological examination. I have notes of some sixty of these cases now before me, and I propose to quote a few of them. Perhaps it should be said *in limine* that since these observations were made many other such have been recorded, and I am quite aware that it is now common knowledge that a pneumococcal infection is a very ordinary thing not only in the pulmonary passages but in almost any part of the body; but perhaps as an independent record these may still be worth mention with such few remarks as I may wish to make in relation to them. The notes of my first case, the one, indeed, that called my attention to the subject, I have most unfortunately mislaid, and the details of it I therefore cannot give, but the patient was a middle-aged somewhat spare man with a chronic bronchial affection that aroused suspicions of tuberculosis, and to my surprise the report came back that the expectoration yielded the pneumococcus in pure culture.

2. A man, aged 40 when he first came under my notice, has been seen from time to time in the last 30 years. He has always looked like a case of phthisis, and he has some little inequality between the two apices, but he has never developed any obvious disease. Tubercle bacilli have never been found, but the little mucus he expectorates contains small numbers of pneumococci and some Gram-negative diplococci.

3. A man aged 36. I saw him first in 1896, when, having dullness all over one side and coarse râles at the apex, I jumped erroneously to the conclusion that he had phthisis. But in 1904 I came across him again, and finding him still alive I then had his sputum examined. There were no tubercle bacilli, but pneumococci in plenty. Once more I saw him in 1908. He had had much chest trouble for many months that he called asthma, but he had gained flesh. His chest was in a very interesting condition, being deep and asthmatic, but all the physical signs were at the *upper* part, and on the right side, where there was much coarse medium râle above the clavicle and down the front and for half-way down the back. There was also plenty of sharp, moist râle along the edge of the sternum, but no evidence of consolidation of the lung. The sputum was still free from tubercle bacilli, and contained plenty of pneumococci, as well as a considerable number of the micrococcus catarrhalis.

4. Here is another case of much interest and, let it be admitted, a doubtful one. An unmarried lady, aged 32, very tall and thin, was seen by Dr. Rayner Batten, of Campden Hill, in 1904 with cough and cold and sharp pain in her right side. It was thought to be pleurisy without a friction sound, and nothing more developing in her chest, she went away. She reappeared in a fortnight with fine râles all over the right chest, the apex more especially, but she had not lost weight, and the sputum, examined on two separate occasions, showed no tubercle bacilli. I examined her at this time, when her right side was deficient in resonance, and *above* the clavicle there came upon coughing a number of coarse râles, *below* the clavicle there were fine and rather sticky râles. She got back to her usual state of health, and six months later came for permission to marry. The chest remained much the same, there were some small dryish râles above the clavicle and below, and in the supraspinous fossa, but they conveyed to me the impression of an unexpanded lung and there was no other evidence of consolidation or disease. I inclined now to think that an old and bad fracture of that clavicle might have something to say as to the want of expansion on that side. Therefore, in the absence of tubercle bacilli to repeated examination, I did not think there was much to be alarmed at, and she was married in the following spring. Seven years later Dr. Batten again asked me to see her. She had gone on much as usual till a month previously when she had been confined of a healthy baby, and since then she had had fever, short breath, and cough, but no expectoration. The sputum, what there was, had been repeatedly examined and no tubercle bacilli were present. My note of her then is as follows: "I should certainly say now that she has apical phthisis, there is so much râle both back and front at the right apex. But it is peculiar that now, as years ago, there is no evidence of consolidation, and I therefore still hold to my original opinion that in the absence of the presence of tubercle bacilli in the sputum the condition is not a tubercular one." I had a further specimen of the sputum sent to me, and it showed staphylococci, streptococci, micrococcus catarrhalis, and diplococci resembling pneumococci, but still no tubercle bacilli. She went into the country, and died there about a month later with cardiac trouble, albuminuria, and lumps in the abdomen, and we heard that the case was certified as "phthisis and abdominal tubercle," but I demur considering that no tubercle was ever found in the expectoration. I think that some intercurrent infection upon the top of a chronic pneumococcal bronchitis is much the more likely, and with the subsequent rapid development of lumps in the abdomen one cannot but suspect that had a necropsy been made we might have lighted upon a surprise even of some other kind.

5. A young Indian, aged 22, had been at Cambridge for three years, where he had had good health. He came to London for an examination, and there he had influenza and congestion on the left side of his chest. The attack would not appear to have been of any severity, but yet it left him without appetite and somewhat broken down. He was out of work until October, when the pulmonary condition failing to clear up he was sent to me. There had been a dry pleuritic rub all round the base of the left lung, and in the axilla, and ultimately on the right side. The sputum examined on three occasions gave a negative result, as did also a Calmette reaction. When I saw him after some six months of ill-health he seemed sound, except that under the

left nipple and round the side to the base—a very suspicious area, it must be admitted, when tubercle is in question—there was a great deal of dry râle, with, at one or two points, a sharp, dry, moist, metallic sound, and there was some slight want of expansion. There was no disease of the apices, and I thought the lungs sound; the dry character of most of the râles made me think that the case was a pneumococcal one. In accord with that opinion, stained films showed considerable numbers of pneumococci and influenza bacilli and small numbers of Friedländer's pneumo-bacillus. There were no tubercle bacilli. Six weeks, and again six months, later he was in much the same condition, there being still a good deal of fine diffused dry râle below the left nipple and into the axilla and back. Pneumococci were still present in small numbers and tubercle bacilli were absent. Six months later still, out in India, his pulmonary condition was as of yore, although he was well in health.

6. A man, aged 35, living much in the healthy parts of India, came home with a high temperature. His brother had died from phthisis years ago. The patient had had influenza a year ago and had never been well since. His right chest was deficient in resonance upon and below the clavicle, and also behind in the supraspinous fossa, and all over this area were coarse, sticky, sibilant râles, especially about the root. The sputum was examined for tubercle bacilli, the influenza bacillus, and pneumococci, but only the pneumococcus associated with the micrococcus catarrhalis was found.

7. A man, aged 59, always subject to colds, had had a bad one for the last nine months. He expectorated much phlegm. The left side was deficient in expansion, and all over the roots of the lungs there was much subdued moist râle. The sputum contained no tubercle, but many Gram-positive diplococci, and the inoculated culture media showed numerous colonies of diplococci, indistinguishable from the pneumococcus.

8. A man, aged 55, a fine healthy specimen of humanity, had double pneumonia after influenza, and was very ill from March to May. Three months later he still had cough, and his expectoration contained both pneumococci and influenza bacilli.

9. A lady, aged 35, got a chill a fortnight before I saw her. She was subject to winter cough, and had lately expectorated a good deal of phlegm. She was sent to me as a case of rapid phthisis, and indeed nothing could have looked uglier than the physical signs. The right side was quite dull in front at the apex; there was less to be heard on auscultation than one expected, but the breathing was coarse and emphysema-like, and I supposed it to be of a complementary character. On the left side fine and coarse sibilant râles could be heard all over the apex and round the nipple. Similar signs could be heard behind, and I supposed the case to be an acute outburst of tubercle, but from the peculiar dry and sticky râles I thought it might possibly be of pneumococcal nature, and so it was. There were no tubercle bacilli and plenty of pneumococci, and she speedily got well.

10. A woman, aged 55, whom I had seen five years earlier with double pneumonia after influenza. She quite recovered from that attack, but a few months ago began to suffer from cough and a thick expectoration. She used the right less than the left side, and at the base there was evidently an adherent and partially collapsed lung. All over this side there was some dry râle, but there was also plenty of good vesicular murmur. I thought her probably suffering from some recent patch of disease in the substance of the lung from which she was recovering, but the nummular character of the sputum looked suspicious of phthisis. However, it contained no tubercle bacilli, but many pneumococci and a few staphylococci.

11. A lady, aged 50, had had influenza four years ago and bronchitis ever since. There was much coarse scattered râle over each lung, but more on the right than on the left side and at the apex than the base, so that the existence of tubercle was possible. Three separate examinations of the sputum at intervals gave a negative result, so the sputum was then examined for pneumococci and the influenza bacillus, and both were found in great numbers.

12. Another but common order of case is this. A young man who all his life has given his relatives much anxiety, because he is such a poor piece to look at; he is always catching cold; occasionally spits a little fleck of blood from somewhere, and he has bad teeth and a dirty tongue—in fact, a capital case for the pyorrhœa-ist to pounce upon and remove all his teeth. He has a granular pharynx also. But although he looks lacking in stamina and a likely subject for tuberculosis, his colds, commencing always in the head and running down into the trachea, do not run the course of the tubercular, and his expectoration, when examined, contains a moderate number of pneumococci, a few streptococci, and the micrococcus catarrhalis, with some Gram-negative bacilli resembling pneumo-bacilli. This man is now "doing his bit."

13. A scraggy, badly nourished boy of 7 1/8 years suffers from febrile attacks and bronchitis and asthma, in which he loses flesh rapidly. He has a fair but rather narrow chest, one side expanding much more than the other, and with many subdued râles. He also has adenoids. His sputum contained plenty of pneumococci, but no tubercle bacilli.

14. Lastly, this case may best serve, perhaps, to show that one must beware of the possibility of making a mistake. A big healthy-looking man, aged 50, had had influenza badly *twice*, and laryngitis with it 15 years ago. Ever since then the slightest cold would fly to his throat, making him short-winded and provoking a quantity of phlegm. He had a harsh, scrapy, rather noisy cough, which made me think of tubercle in his larynx, but perhaps more of aneurysm, but I could find nothing in his chest. His larynx, too, was not like a tubercular one, being intensely injected throughout, and perhaps a little granular. The sputum contained a considerable number of pneumococci and a few of the micrococcus catarrhalis. Tubercle bacilli were not present. He got well and I saw no more of him for a year, when he turned up again with a similar attack. He was still a big, florid, well-looking man. The larynx was again acutely congested, he had the like harsh raucous cough, and after a very careful examination of his chest I could detect no disease. I sent him to a laryngologist, but his friends diverted him to a bacteriologist, who said he had active tuberculosis at both apices, and tubercular bacilli in his sputum. So I give the case as a warning to myself, but at the same time I shall truthfully confess that I wonder if bacteriologists ever make mistakes, and that at the back of my head I think, "Could it have been so here?" This patient died some four years later somewhat suddenly and unexpectedly, the certificate being signed "Tuberculosis."

There can be no need to add to these cases. All the remainder of my series are more or less alike in the information that they yield. I think there is generally a something in the quality of the crepitation that is to be heard that puts one on the *qui vive*, for although it may be confined to one apex and be thus suspiciously like a tubercular invasion, the râles are often dry and rustling rather than consonating. There is no accompanying bronchial breathing or other evidence of consolidation or softening of the lung. This condition is found in people mostly, but not exclusively, of middle age or older; with a frequent or long history of colds or cough; sometimes with a little hæmoptysis; none of them revealing any bacteriological evidence of the presence of tubercle, but all of some other one or more variety of micrococcus or bacillus: a diplococcus resembling the pneumococcus invariably, but also the micrococcus catarrhalis, staphylococci, once the micrococcus paratetragenus, the influenza bacillus, and so on.

A further point is that when the diplococcus alluded to is present it is likely to be very persistent, and to be associated with more or less evidence of bronchial disturbance for a long time. And this statement applies not alone to the pneumococcus but also to the influenza bacillus, and, indeed, accords with what we know of germs in other parts of the body, the bacillus coli, for example, in the genito-urinary tract. Where once they thrive it is difficult to extirpate them. A diplococcus resembling the pneumococcus is the one that never fails in any examination, and the question naturally comes to mind, Is this the diplococcus pneumoniæ, or is it one of several other kinds of diplococcus—now this, now that—and each owning a separate life-history as regards its power of possession? I assume it to be *the* pneumococcus, one and only, but I make no positive statement because this is a question for the expert, and I suspect an extremely open one. I think that if I were a bacteriologist I should have some hesitation in expressing an opinion upon the shades of distinction that differentiate these low orders of being. I indeed expect to be told quite pertinently that one may not be able to distinguish these separate genera unless they be plated out and grown into a more mature shrub. This has been done for me now and then, but one wants to know still more than we do. For instance, are "Gram-positive" and "Gram-negative," "intracellular," and other characteristics, true for each condition of growth in which a particular germ is found, under all the usual variations of cultivation that may occur to it? To put the question more specifically, Are these various strains of diplococci, as has been suggested to me by one bacteriologist, one and the same race of continuous descent, but bred under different circumstances in a slightly different environment, or are they distinct genera, altogether different, one from another and characterising quite different diseases? If they are all of one family, how does the fact bear upon latent activity, epidemic prevalence, and the carrier theory? There is no doubt, for instance, that some cases of pneumonia are highly infective, there are others (? the majority)

that are not so at all. In what lies the difference? In the host or soil? In the germ? In atmospheric conditions (epidemicity?), or what? Clearly from these observations the presence of pneumococci is so common it would be impossible to isolate every one who has pneumococci in his sputum, yet there may be some here and there who have undergone or are undergoing some intensive process who might become dangerous at any time, or at any time be merging into that condition. I should suppose similar musings would apply to the influenza bacillus.

It is thus that the nature of epidemic disease comes before one for it seems not unlikely that some germs have periods of dormancy and activity, and that such oscillations may be a part of the rhythm of their life. It might, on the other hand, be due to the rhythm of the life of their host. For instance, it is possible that at some rhythmic periods of our existence, some recurring time of the year maybe, our economies are engaged in turning out large quantities of what, I suppose provisionally, has been called "antibody," that keeps things quiet. At others our cellars are more or less empty of that commodity. Is it for the lack of some such product that malignant growths are so much the evidence of decadence and decline? And it may well be that some influence of this kind, if it kept full-bodied, might, as Dr. Gordon Goodhart suggests, by its continuous action in the course of time, so modify the disposition of the germ as to destroy its potentialities for evil.

I remember when looking up the question of epidemic influenza some years ago two things struck me: (1) that the disease described in its earliest years was very much the disease that we have had amongst us in recent times; and (2) that it was well-nigh impossible to limit the disease to definite epidemic outbreaks. There are periods when the disease is very prevalent and of great virulence, but when we come to mark the time when the malady for a time ceased to be there is great difficulty in fixing it. The disease rises and falls in prevalence throughout the century (see Creighton's "History of Epidemics,") and it may reasonably be suspected, even if it be not already proved, that worked at from a bacteriological standpoint this would be shown much more conclusively. I think it may reasonably be in question whether influenza, as a *germ*, is ever altogether absent, although its stocks be low and the manifestations of its actions dormant, and, if so, what rouses these germs from time to time into a state of virulence?

Take another point. There are some pneumococci that expend their energies in the old-fashioned way of an acute croupous pneumonia, as it used to be called, but there are many that do not do so, but show up as a pneumococcal meningitis or peritonitis, quite a different sort of disease. I think, too, that it is doubtful if the different kinds of pneumococcal infection are prevalent at the same time, acute pneumonia certainly being more rife in the treacherous weather of spring and early summer.

Akin to the last point is another. It is notorious that some germs have a good time in company. The influenza bacillus and the pneumococcus are frequently found together, and the pneumococcus then seems to flourish the more abundantly, but the staphylococcus and streptococcus are probably in the same ring.

What is the relation of these various growths to each other? Do they simply flourish as weeds side by side, or do they gain strength and activity by the imbibition of each other's juices? Do they even marry and beget half-castes sometimes? We as yet really know so little about the symbiotic fusions of these very lowly organisms of infection, their sisters, their cousins, and their aunts. 'Tis a wise father, indeed, that knows its own child in those walks of life, and it implies no very arrogant imagination to suggest that as these minute beings move about in their infinite number and variety, and possibly velocity, they may so tincture each other and the fluids in which they move as to lead to the maturation, not necessarily in the next generation or even in many, of new sorts of hybrids if we could only be as familiar with them and their progress as we are with that of, say, strawberries or cherries. As a matter of growth or cultivation it would seem that these low organisms may naturally be expected to develop differently according to the medium in which each finds itself, if it can live at all outside its own proper mother liquor. If this be so, is it not thus that hybrids are bred, new varieties of disease develop, and old ones change their type and die out? I have thought this to be possibly the case with enteric fever. This disease of late years has given us quite a different picture from that which was rife, say, 40 years ago, but a case from the front came before me a few weeks ago of quite the old stamp, with its high fever, wild delirium, subsultus, and thickly coated, dry, brown tongue. Intensive cultivation in France on the field of war had revivified the strain and had recalled the worst features of the disease.

In raising all these questions I am quite ready to accept the rebuke of the bacteriologist should he say, "One thing at a time if you please." All I plead for is that in this domain, so new and so subtle, and in which it is so difficult to make adequately intimate observations, all opinions formed shall be considered as purely provisional, whereas I think they are too much otherwise and dogmatic.

As regards treatment in these cases I have not much to say. I record them more for their bearing upon the natural history of disease. A few of them have had vaccines, but none, so far as I remember, with any conspicuous success; but I am, of course, aware that it is in this class of cases that vaccines have repeatedly been recorded to have given remarkably good results. One man of my acquaintance did indeed have not one course but several, and he considered that he obtained considerable relief from them, and I suppose his opinion was worth more than mine as the experience was his; but to my eye, the case being one of advanced emphysema and dilated heart, with probably considerable fibroid changes in the lungs as well, no remedial agents seemed to promise any material relief save relegating him to some warmer and sunnier climate where his reduced pulmonary area would be of less importance, and where he would have more chance of making both ends meet. This being impossible he died not long afterwards.

As regards the value of vaccines in these cases I am strictly neutral and awaiting further knowledge, but I do say that for colds and catarrhs, indeed I might say for pulmonary affections of all kinds for which vaccines or inoculations have been advocated, such methods have not yet passed out of the range of experiment, and I do not feel that in giving advice I am as yet in a position to say more.

There can be few who are more interested in these new lines of investigation from a scientific standpoint than I am. When one thinks of the many natural forms of immunity that are brought about by the exanthemata; the changes that are wrought in the body by vaccination, by inoculations of one sort and another; when we go to plant life and see the wondrous things wrought by graftings and by manures of this sort and that; how in growth and culture resistances are thus formed in one direction, facilities in that, one cannot but see that there is good ground for experiments of this sort in all directions, and to justify great hopes of well-established and strong lines of successful treatment being their outcome in the future. But up to now I can hardly think the position of affairs is satisfactory. Many of these methods are put upon the market far too early; they are recommended by some because they are supposed to know, and are accepted dogmatically in place of tentatively; and a public impatient of disease and eager to take any short cut for its removal thus is liable to misconceive the true position of things. I would that these infant physiological processes could be kept in the background of the nursery longer, and that when allowed to come downstairs they should still be kept strictly within the leading-strings of experience and of scientific observation. That they are not so is, I think, the reason that they are often prematurely and inconsiderately banned altogether. Animal extracts are, I suspect, not adapted to everybody, nor are they for everyone to administer. A large experience is needed to minimise the risk of doing harm, and a still larger one to be able to follow the path and the effects of these substances through the system. The physician would seem to need to combine the attributes of the well-trained bloodhound and an archbishop to track these spirit-like emanations as they course through our vitals. No novice need apply.

THE Royal Humane Society have awarded a bronze medal to Dr. Alan McDougall, medical superintendent of the Epileptic Colony at Sandle Bridge, near Alderley Edge, Cheshire, for rescues effected on the occasion of an ice disaster.

BLOOD FINDINGS IN EPILEPSY.

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DURING the past five years I have had the opportunity in private practice to study the blood of 369 epileptic patients. Careful records have been kept, and occasion is now taken to summarise these observations in the hope of drawing some deductions which may be of value in this interesting, but little understood, affliction.

Blood examinations were made of each patient. Counts of the red and white cells and estimations of the hæmoglobin were made 485 times; differential leucocyte counts were made 4760 times; the alkalinity of the blood was estimated 324 times, and more than 9000 coagulation tests were made. For various reasons it was impossible to make complete and uniform observations in all of the cases. However, in a series of 100 cases the hæmoglobin was estimated, a red and white count taken, and 2264 differential leucocyte counts made. There were in this series 39 female patients, whose ages were divided thus: 11 patients were between 10 and 20 years of age, 14 were between 20 and 30 years, 8 were between 30 and 40 years, 5 were between 40 and 50 years, and 1 was over 50 years. Sixty-one males, giving the following ages, completed this series, as follows: 2 were under 10, 16 were between 10 and 20, 17 between 20 and 30, 19 between 30 and 40, 4 between 40 and 50, 2 between 50 and 60, and 1 over 60 years of age.

Before enumerating the blood conditions found, I would call attention to the fact that the 100 patients in this series came from 36 different States, that not one of them was an institutional case, and that all of them were from well-to-do families; consequently the influence of locality, climate, poverty, lack of nutrition, and environment can be eliminated in considering my findings.

Hæmoglobin.

In the series of 100 cases the hæmoglobin averaged 84 per cent. (Dare's hæmoglobinometer). The lowest percentage was 65, and occurred in a 65-years-old male patient. The highest percentage was 100, and was found in a 27-years-old male. The hæmoglobin in this series of 100 patients was as follows:—Males: 16 cases ranged between 90 and 100, 24 between 80 and 90, 15 between 70 and 80, and 6 between 60 and 70 per cent., the hæmoglobin in the 61 males averaging 86 per cent. Females: 2 cases ranged between 90 and 100, 20 between 80 and 90, 15 between 70 and 80, and 2 between 60 and 70 per cent., the hæmoglobin in the 39 females averaging 81 per cent.

These findings are at variance with a series of cases recently investigated by Fackenheim (Congress for Internal Medicine, Wiesbaden, 1914), who found in 67 per cent. of his cases a diminution of hæmoglobin to between 50 and 60 per cent. In 31 per cent. of his cases it was between 60 and 70 per cent., and in only 2 per cent. was it as high as 80. The difference between my findings and the observations of Fackenheim may possibly be explained by the social status of the patients studied. My experience, however, indicates that the affliction (epilepsy) itself, everything else being equal, produces no decided reduction in the hæmoglobin.

A series of estimations was made to determine the effect of an attack on the colour pigment of the blood, and while in a number of cases there appeared to be a slight reduction of between 5 and 10 per cent., in other cases the reduction was very slight, if any, and promptly returned to normal for that individual shortly following an epileptic seizure.

The Erythrocytes.

The average number of erythrocytes for the 100 cases was 4,640,037. The lowest count showed 3,396,000 per c.mm. in a 45-years-old female patient; the highest count gave 6,400,000 in a 29-years-old male patient. About one-tenth of the cases showed more or less crenation of the red cells, but only in 5 per cent. of the cases were there present a correspondingly large number of poikilocytes or microcytes. This again is at variance with Fackenheim and others who have reported these changes commonly present, as well as nucleated reds, in as high as 85 per cent. of their cases. Here again the social status of the patients of my series doubtless explains in part at least the difference in the morphology of the erythrocytes.

The Leucocytes.

In this series of 100 cases the leucocytes ranged between 3650 and 9360 during the interparoxysmal periods. Shortly after attacks they varied from 5620 to 37,550 (see Table I.). A *daily* leucocyte count was made in 10 cases of the series; in some cases a count was made at varying intervals after a seizure until the white cells were found to approximate the normal number for the individual under study. The length of time required to accomplish this reduction to the normal varied from 12 to 48 hours as shown by the following table.

TABLE I.

Case No.	Between attacks.		Following attacks.	
	Low.	High.	Time.	Count.
1	36,550	75,000	5 minutes.	11,860
2	5,962	9,360	6 hours.	12,500
			12 ,,	9,680
			18 ,,	6,240
3	5,680	7,820	24 ,,	24,760
4	5,620	6,560	9 ,,	10,920
5	5,620	6,880	20 minutes.	8,420
			1 hour.	9,680
6	4,320	7,960	2½ hours.	11,080
			14 ,,	18,120
			22 ,,	14,680
7	4,060	7,180	6 ,,	15,360
			18 ,,	9,680
8	5,620	8,187	12 ,,	37,550
			24 ,,	15,312
			36 ,,	10,620
			48 ,,	9,996
9	5,620	6,812	30 ,,	10,060
10	5,900	7,680	15 minutes.	13,000
			30 ,,	11,560
			12 hours.	5,620

The findings in this series of leucocyte counts indicate that epileptic seizures are followed by a varying degree in the number of leucocytes per c mm. in the peripheral blood. This condition is not constant, however, even though none of the cases studied failed to show such increase. Following one attack the increase may be slight, while following another in the same patient it may be decided. Neither does the degree of increase in the leucocytes bear any ratio to the severity of the convulsive paroxysm. At times the very slightest seizures, with only mild tonic convulsive movements, were followed by an increase in the number of leucocytes to 13,120 per c.mm. At another time two severe attacks closely following one another, with violent tonic and clonic spasms, showed an increase in the white cells of from 5800 before the seizure to only 8000 after the attack. As a general rule, however, my experience would indicate that an epileptic attack developing in an otherwise healthy subject is almost invariably followed by a temporary leucocytosis.

Differential Leucocyte Counts.

An analysis of the differential leucocyte counts in this series of 100 private cases of epilepsy is unique in so far as it has been possible to correlate these findings with reports furnished by the literature. The following table summarises my findings:—

TABLE II.

Cell.	Normal range (Howell).	Range in 100 cases of epilepsy (Spangler).			
	Percentage.	Within normal limit.	Above normal limit.	Below normal limit.	Average for 100 cases (present series).
		%	%	%	%
Small lymphocytes ...	20–25	39	51	10	27·11
Large lymphocytes ...	1 or less	2	98	—	9·31
Polymorphonuclear ...	60–75	59	3	38	60·10
Eosinophiles	4 or under	88	4	8, absent	2·19
Transitionals	2–10	13	—	87	0·78
Basophiles	1 or less	31	28	43	0·51

Howell[1] gives a range of 20 to 25 per cent. as what may be considered normal for the small lymphocytes. It will be noted in the above summarised table that 39 per cent. of the cases fell within these normal limits, while 51 per cent. were above the normal range and 10 per cent. fell below it. However, the average of the small lymphocytes for the series was 27·11 per cent., which average corresponds closely to Howell's high normal limit.

The large lymphocytes, according to Howell, are normally 1 per cent. or less. In this series only 2 of the 100 cases fell within the normal limit, while 98 of them gave counts above this physiologic range. The average per cent. of large lymphocytes in the differential counts for the 100 cases was 9·31 per cent.—a decided enough increase to be suggestive of clinical significance. The large lymphocytes in one differential count of the series reached 23 per cent.

In this series the polynuclear leucocytes fell within the normal range (60 to 75 per cent.) in 59 of the cases. In only three instances were there multinuclear elements above 75 per cent., while in 38 per cent. of all differential counts made the polynuclear cells were found to equal less than 60 per cent. of the leucocytes present. The average for the series was 60·1.

The eosinophiles, regarded by Howell as being a subdivision of the polymorphonuclears, were within the normal limits of 4 per cent. or under in 88 of the cases. An eosinophilia of 5 per cent. was observed in only 4 of the 100 cases studied, and in 8 of the differential counts eosinophiles were not found while counting 200 leucocytes.

The basophiles and transitional forms fell within what may be regarded as the normal range.

Clotting Time of the Blood.

During the past three and a half years I have studied carefully the clotting time of the blood in each case of epilepsy that I have had the privilege of examining. A review of case records shows that more than 9000 clotting time tests have been taken. A Boggs coagulometer was used in making all of these tests, and in order to eliminate variation in personal equation and to have as uniform results as possible, I made all the tests myself.

In a previous series of 18 cases reported[2] the average clotting time was 3·04 minutes. The longest clotting time in that series was 4 minutes; the shortest one 1·5 minutes. In the present series of 100 cases the average clotting time was 3·14 minutes. The longest clotting time in any case of this series was 6 minutes, the shortest 1·5 minutes. In the tests referred to all estimations were made during the interparoxysmal periods, and before any treatment was instituted.

The average normal clotting time of the blood with the Boggs instrument is given by Hinman and Sladen[3] as being 5 minutes 6 seconds. It is generally admitted, however, that under normal conditions comparatively wide variations in the clotting time of the blood may be found in the normally healthy individual, when any of the established methods for determining the same are employed. Some workers with the Boggs instrument have made the normal limit between 3 and 8 minutes.[4]

The fact that the normal limit varies makes the findings above reported all the more significant. It has been conclusively proven to my mind that all cases of so-called essential epilepsy invariably show the phenomena of decreased clotting time of blood. The fact that this time in some cases falls within the limits of what may be regarded as normal, say 3 to 8 minutes with the Boggs instrument, does not prove that the epileptic's clotting time is perfectly normal and not abnormally short. On the contrary, in the present series of 100 cases the clotting times were divided as follows: 7 fell between 1 and 2 minutes, 45 between 2 and 3 minutes, 33 between 3 and 4 minutes, 13 between 4 and 5 minutes, and 2 between 5 and 6 minutes.

These findings indicate that in only 2 per cent. of the cases did the clotting time during the interparoxysmal period exceed the normal average of 5 minutes and 6 seconds. In 98 per cent. of the cases it was below the normal average, and in 52 per cent. it fell below the shortest limit of what is considered the normal range (3 to 8 minutes).

These findings are largely in accord with those of Dr. John Turner,[5] who made extensive investigations into the clotting time of the blood in epilepsy, with the following conclusions:—

"(*a*) The average rate of coagulation is greater in severe cases of epilepsy; (*b*) the rate is quickened during the period that the patient is having fits (serial epilepsy); (*c*) there is a further quickening of the coagulation rate up to 24 hours before a seizure; (*d*) from 24 to 48 hours after a fit there is a rebound and retardation in the rate of blood coagulation."

Alkalinity of the Blood.

The alkalinity of the blood was tested in a series of 21 epileptic patients and in 3 control cases. These patients and control cases were all eating the same diet, which was a general mixed one consisting essentially of fruits, cereals, green vegetables, eggs and milk, with meat only once daily. The patients were 14 males and 7 females. The control cases were all males. These was a total of 324 tests made. The blood was taken daily between 10 and 11 A.M. in each case, and in 5 of the patients and 2 of the control cases the tests were also made between 7 and 8 P.M. A general summary of the results is given in Table III.

TABLE III.

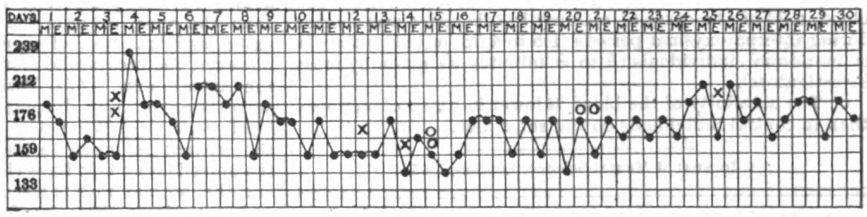
21 Epileptic Patients.

Case.	Lowest.	Highest.	Average.	Case.	Lowest.	Highest.	Average.
1	159	212	171	12	140	212	176
2	133	184	163	13	176	266	196
3	212	239	196	14	156	212	185
4	140	239	174	15	159	159	159
5	140	212	167	16	184	196	188
6	186	239	213	17	140	212	159
7	180	212	196	18	159	176	167
8	133	212	174	19	212	212	212
9	140	266	176	20	218	218	218
10	133	176	159	21	176	256	239
11	176	239	212	Patients' general average, 186			

Control Cases.

22	176	266	214	24	218	218	218
23	176	239	204	Controls' general average, 212.			

The Dare hæmoalkalimeter was used in making the tests. According to the Dare method 2 cm. of normal blood is neutralised by 2 c.c. of reagent, or 266 milligrammes of sodium hydrate to 100 c.c. of blood. Therefore, the 266 point line is considered as normal in the above tabulation and in the following chart. It will be noted that, with the diet used, the general average for the control cases was 212, or 54 points below the normal average, while the general average for the patients was only 186, or 80 points below the normal and 26 below the control cases. Only twice in all the tests did the alkalinity of the patient's blood reach the normal height of 266. By comparing the alkalinity of a patient's blood at the time of an attack with the alkalinity at times when no seizure occurred, it was found that while the general average alkalinity in interparoxysmal periods was lower than the normal average as established by Dare, and also lower than the control cases by 26 points, nevertheless on days when seizures occurred it was found that the alkalinity of the blood was not appreciably influenced by the attack. To illustrate I will cite one case in detail.



Variations in alkalinity of the blood in relation to attacks. o = Slight attack; x = severe attack. (266 is considered the normal point.)

[1] Text-book of Physiology, fifth edition.
[2] New York Medical Journal, April 5th, 1913.
[3] Anders and Boston's Diagnosis, first edition.
[4] Simon, Clinical Diagnosis, seventh edition.
[5] Journal of Mental Sciences, London, October, 1908.

The patient was a male aged 40, and the duration of epilepsy was ten years. Physical condition good. The patient's father, who had died at the age of 55 years from jaundice, had been subject to epileptic attacks at long intervals for 19 years. His mother was living and well, and in her sixty-eighth year. The patient was the fourth child in order of birth; no accidents or injury of head. Between 20 and 30 years he had used alcohol to excess. The epileptic history showed that he had had his first convulsive attack when 30 years of age. He had had from two to four major attacks a month since, and for several years had also had series of petit mal attacks, from two to eight in 24 hours, recurring from two to ten days apart, and a mild attack was often followed by a few minutes of automatism, and the mental confusion frequently lasted from 10 to 20 minutes.

The diagrammatic chart shown on the preceding page illustrates in detail the variations in the alkalinity of the blood in relation to the attack.

In some respects my experiences coincide with those of Pugh,[6] who made studies of the alkalinity of the blood in epileptic patients by using Wright's method. His general conclusions were as follows:—

"The alkalinity of the blood undergoes marked changes in epilepsy. (*a*) It is below normal during the interparoxysmal period. (*b*) It undergoes a further diminution after the fit is over. This after diminution depends upon the length of time, the severity of the muscular spasms, and the degree of alkalinity in the interparoxysmal period. (*c*) It undergoes a sudden and pronounced fall immediately prior to the onset of a fit. (*d*) There is a gradual return of the blood to its normal alkalinity which takes place in five to six hours. (*e*) There is a relationship between the degree of alkalinity and the onset of the fits—e.g., the higher the alkalinity the less liable is the patient to have a fit."

My experience in an investigation of 24 cases, with the Dare method, indicates: 1. The daily average alkalinity of an epileptic's blood is invariably below that of a control individual using the same diet. 2. An epileptic attack, in my experience, causes no further diminution of the alkalinity of the blood nor does the severity of the convulsion (muscular exertion) have any modifying influence. 3. A night and morning estimate of the alkalinity for a month, during which period both major and minor seizures occurred, failed to demonstrate any noteworthy modification of the alkalinity either before or after either form of seizure.

General Conclusions.

1. The percentage of hæmoglobin in epilepsy is comparatively high (84 per cent. in the present series of 100 cases).

2. The red cells show no marked diminution and, with few exceptions, no evidence of degeneration in cases of uncomplicated epilepsy.

3. The white cells in cases of epilepsy fall within the normal limits during the interparoxysmal periods; uniformly, however, there is a tendency to leucocytosis, and at times a hyperleucocytosis at the time of, and frequently for 24 hours following, an epileptic seizure.

4. The average percentage of the small lymphocytes and the polymorphonuclear cells in the 100 cases fell within normal limits; the large lymphocytes averaged 9 per cent. above the normal range; there was no evidence of eosinophilia.

5. The clotting time of the blood is shortened before an epileptic seizure. The range of the clotting time of the blood in 98 of the cases of epilepsy in this series was shorter during interparoxysmal periods (1·5 to 4·75 minutes) than it is in normal individuals (3 to 8 minutes as given by most investigators).

6. The alkalinity of the blood is lower in cases of epilepsy than in control individuals on the same diet.

[6] Journal of Mental Science, London, 1903.

Mr. David Hooper, F.C.S., F.L.S., late curator of the Industrial Section of the Indian Museum, Calcutta, has been elected President of the British Pharmaceutical Conference. He assisted in the compilation of "Pharmacographia Indica" and "Materia Medica for India," has been "quinologist" to the Madras Government, and has made many valuable contributions to scientific journals upon botanical and chemical subjects. The Conference is to hold its annual meeting on July 19th. Mr. Hooper has been elected in place of Major E. Saville Peck, who has resigned in consequence of the increasing pressure of military duties, while Mr. J. C. Umney, the Acting President, is resigning the office under medical advice.

THE SIGNIFICANCE OF PRESYSTOLIC CARDIAC MURMURS.

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DEPUTY MEDICAL EXAMINER, LONDON COUNTY COUNCIL; DEPUTY CHIEF MEDICAL OFFICER, LONDON FIRE BRIGADE, METROPOLITAN WATER BOARD, AND L.C.C. TRAMWAYS.

OF presystolic murmurs audible at the cardiac apex I recognise three varieties: (1) Flint's presystolic murmur, due to aortic incompetence; (2) "stenotic" presystolic murmur, due to mitral stenosis; and (3) "astenotic" presystolic murmur of doubtful origin. It is of great importance to differentiate between these, since they vary widely in etiology, significance, and results. The first two classes are very serious conditions, the third is of comparatively little moment.

1. *Flint's presystolic murmur* is mechanically produced by the regurgitation of blood through the incompetent aortic valve; it is of frequent occurrence and of serious import, an absolute bar to life insurance or to any heavy work. A man who has such a murmur must not be accepted as a motorman or in any other capacity in which his sudden fainting would endanger himself or others. This murmur is recognised by the following characteristic signs: (*a*) An aortic diastolic murmur is audible. (*b*) The second sound at the apex is not reduplicated, but is immediately followed by the presystolic bruit, leading up to the rather abrupt first sound. (*c*) Dyspnœa and palpitation are very marked after exertion. (*d*) There are signs of cardiac enlargement. (*e*) A presystolic thrill may be palpable.

Presystolic murmurs not produced as above by aortic regurgitation are caused at the mitral valve, and may be separated into two classes which I propose to name "stenotic" and "astenotic."

2. *Stenotic presystolic murmurs* result from narrowing of the mitral valve. This is a serious form of heart disease only second in gravity to aortic incompetence, and therefore in a general way more dangerous than either aortic stenosis or simple mitral regurgitation. In these cases we find: (*a*) A murmur presystolic in time, rough and vibrant in quality, of gradually increasing intensity till it ends abruptly in a sudden short and sharply accentuated first sound. (In late stages of this disease the first sound may be represented by a systolic murmur, and finally, as dilatation of the heart increases, the presystolic murmur itself may disappear, and then only a systolic murmur remains.) (*b*) *On palpation* of the præcordial region the apex beat is found to be heaving and widely diffused; its point of greatest intensity may be displaced outwards if dilatation is present and downwards if the heart is hypertrophied. A marked presystolic thrill is felt ending abruptly in a sudden systole, after which the heart recedes from the hand rapidly, almost instantaneously. (*c*) The præcordial dullness may be, and generally is, enlarged. (*d*) Besides the murmur described above we find the second sound reduplicated, since the high pressure in the lung vessels causes the pulmonary valve to close before the aortic valve. From the same cause it is found that the second sound is always accentuated at the pulmonary valve area. (*e*) The presystolic murmur is conducted upwards from the apex towards the base, but not outwards to the axilla, as in the case of systolic murmurs. In some cases, however, the presystolic murmur is very narrowly limited to the apical area. (*f*) Patients who suffer from mitral stenosis are usually dyspnœic and incapable of performing hard work. (*g*) When the pulse is carefully counted and the patient is made to ascend a stair of some 20 steps the pulse is found to have risen 30 or 40 beats per minute, and the normal rate is not resumed till well over a minute, and sometimes three or four minutes elapsed before the original rhythm returns.

This is a test to which I attach great importance; it is not by any means characteristic of this particular form of heart disease alone, but simply indicates the value of the heart as a working organ, and I use the test as a means of judging the state of the cardiac muscle when the heart sounds are normal or nearly so, and especially with a view to advising as to the safety or otherwise of a patient to whom it is proposed to administer an anæsthetic. If this test were invariably applied I believe many deaths from anæsthetics would be avoided, as in a

considerable number of cases fatality results not from valvular conditions which can easily be appreciated, but from heart muscle weakness (fatty or fib-oid) of whose existence the stethoscope does not inform us. In the test described above the normal pulse-rate should return in from half to one minute; if it does not do so an anæsthetic should only be given if an operation is essential to life, and even then with every possible precaution. (If it is inconvenient to send a patient upstairs for the above test, the same results follow from touching the toes 12 times, which represents about the same amount of work done as when the body weight is raised up the height of a stair of 20 steps.)

3. "*Astenotic*" *presystolic murmurs.*—The doubtful cases from an insurance point of view are such as: (*a*) Occur in apparently healthy patients who are capable of hard work. (*b*) These murmurs are definitely presystolic in time and end abruptly. (*c*) The second sound is not reduplicated, showing that there is no increase of pressure in the lung vessels. And for the same reason (*d*) the pulmonic second sound is not accentuated. (*e*) There is no enlargement of the heart, and the apex beat is therefore normal in position. These murmurs are possibly due to a roughening or slight crumpling of the mitral valves insufficient to cause either stenosis or incompetence. (*f*) There is usually to be felt a presystolic thrill; in fact, if the apex beat can be felt at all in these cases a thrill is always palpable. Exercise or nervousness by increasing the heart's action may accentuate this astenotic murmur, but sometimes, on the other hand, it diminishes on exertion. Nervousness always rather increases it, but never entirely produces it.

I regard these murmurs as comparatively unimportant for the following reasons: They are not accompanied by cardiac enlargement or dilatation. They exist in people capable of hard work and in whom when my stair test is applied the normal rate returns in less than one minute. They are not accompanied by accentuated pulmonary second sound or by reduplication of the second sound, since the mitral valve not being narrowed there is no increased pressure in the pulmonary artery, and the circulation is not delayed or dammed back.

It comes, then, to this. A presystolic murmur not due to aortic incompetence and which is accompanied by signs of delay in the blood's entrance into the left ventricle is due to stenosis and is dangerous. Simple presystolic murmurs not so accompanied are comparatively unimportant. Sir Thomas Barlow, with whom I happened to talk on this "presystolic" question, lays much stress on the condition of the right auricle and ventricle. Any enlargement of these, indicated either by increase of the cardiac dullness towards the right or by marked epigastric pulsation, is, of course, a very clear indication of the increased resistance due to actual mitral stenosis, and if present, would denote the stenotic nature of the murmur.

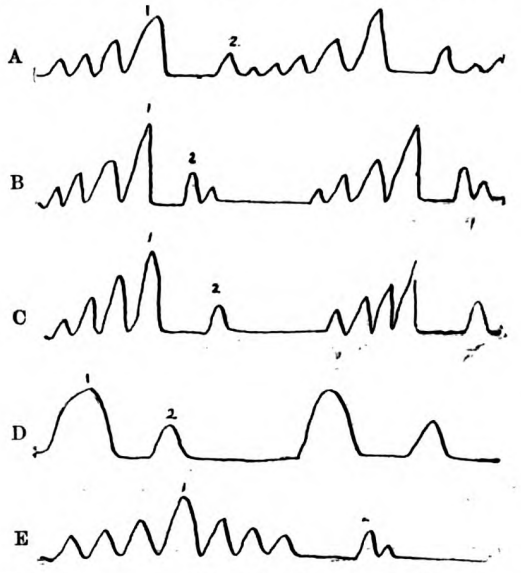
—	Flint's presystolic murmur.	Stenotic presystolic murmur.	Astenotic presystolic murmur.
Second sound at apex	Not reduplicated.	Reduplicated.	Not reduplicated.
Pulmonic valve second sound	Generally normal.	Accentuated.	Normal.
Aortic valve second sound	Diastolic murmur.	Normal or lessened.	Normal.
Response to stair test ...	Very bad.	Bad.	Good.
Cardiac dullness	Always enlarged.	Generally enlarged.	Never enlarged.
Dyspnœa	Marked.	Easily induced.	Normal.
Palpitation ...	Characteristic.	Easily induced by excitement or exertion.	Normal.
Apex beat ...	Displaced.	Usually displaced, but only slightly till later stages.	Not displaced.
Other murmurs	Aortic diastolic. Mitral systolic may be present in late cases.	Systolic mitral murmur comes in late cases.	None.
Thrill	Usually.	Always.	Always.
Right ventricle	Normal at first.	Enlarged.	Normal.

The differences between the three varieties of presystolic murmurs may be tabulated as shown.

It is most important from an insurance company's point of view that these cases should be carefully differentiated, but when the examiner is in any doubt it is wiser to treat all presystolic murmurs as serious than to risk accepting even at an increased premium patients suffering from so serious a condition as either mitral stenosis or aortic regurgitation. Even when after most careful examination it is ascertained that it is a case of "astenotic" presystolic murmur I recommend that several years should be added to the age of the patient when calculating the premium he ought to pay, since I believe many of these cases have slightly abnormal mitral valves which are more apt to become incompetent than a normal valve. The number of years to be added must depend on the particular case, but should never be less than five. "Astenotic" cases can, however, be accepted for any ordinary occupations and even for posts of such importance as tramdrivers, chauffeurs, &c., since fainting is never a symptom of this condition *per se*. The existence of this murmur is not a bar to military service, nor to any form of sport or exercise.

I have, after making inquiry, found such divergence of opinion on this subject, that it may be of interest and value to give the results of my own very considerable experience as a medical examiner in the hope of clearing up to some extent the points in dispute.

The murmurs here discussed may be diagrammatically represented as below: (A) Flint's murmur; (B) Stenotic



presystolic murmur; (C) Astenotic presystolic murmur; (D) Normal heart; (E) Stenotic presystolic and systolic murmurs.

Or the sound may be imitated by pronouncing: (A) Flint's: Frrip, dupfrrrip, dupfrrrip; (B) Stenotic: Frrrip, dupup; frrrip, dupup; (C) Astenotic: Frrip, dup; frrrip, dup; (D) Normal: Lub dup; lub dup; (E) Stenotic and systolic: Frrripwhist dup; frrripwhist dup.

South Eaton-place, S.W.

LITERARY INTELLIGENCE.—The third edition of Bosanquet and Eyre's "Serums, Vaccines, and Toxins in Treatment and Diagnosis" is announced for immediate publication by Cassell and Co., Limited. The volume has been subjected to a thorough revision and enlargement, while the bacteriological lessons taught by the war receive due attention.

THE INVALID CHILDREN'S AID ASSOCIATION.—The annual meeting of this association will be held, by kind permission of the Speaker and Mrs. Lowther, at the Speaker's House, Palace of Westminster, on Wednesday afternoon, May 10th, at 3 o'clock. His Eminence Cardinal Bourne will preside, and Major H. S. Souttar, Miss Geneviève Ward, and Sir Melvill Beachcroft will be among the speakers. Applications for tickets should be made to the secretary, 69, Denison House, 296, Vauxhall Bridge-road, Westminster, S.W.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

NOTE ON A TYPHOID CARRIER.[1]

BY S. F. DUDLEY, M.B., B.S. LOND.,
STAFF-SURGEON, R.N.; MEDICAL OFFICER IN CHARGE OF LABORATORY, R.N. HOSPITAL, CHATHAM.

BETWEEN April, 1911, and March, 1914, H M.S. *Formidable* serving in the Home Fleet returned 28 cases of enteric fever at a time when other ships were remarkably free from this disease. These cases occurred singly at irregular intervals, in any part of the ship, and in various ports. The drainage, water, and food-supply were, after an exhaustive investigation, found to be above suspicion. Ships serving under identically the same conditions returned clean sheets as regards typhoid. Practically the only other possible cause of the epidemic in the *Formidable* was that a carrier was present in the ship. The ship was free from enteric before April, 1911, therefore this carrier must have served in the ship since that date, or taking the earlier cases to have had some other origin, the carrier might be one of the original cases of typhoid who had returned cured to the ship. These facts reduced the search to those who were serving in the ship before April, 1911, and to those who had had enteric fever whilst serving in the ship, about 50 men in all. All these men had their blood examined for agglutination against B. typhosus and their urines and fæces bacteriologically examined for B. typhosus. No B. typhosus was isolated from any of their excreta on the first investigation, but one man gave a marked positive Widal reaction. He was re-examined three times and it was only on the third examination that B. typhosus was isolated from his fæces. This case has the following history:—

During October, 1898, the man was sent to Royal Naval Hospital, Chatham, suffering from enteric fever. In 1899 he had dysentery in China, otherwise he has not had a day's illness since. He is a strongly built, big man, 39 years old. He has no signs or symptoms of gall-bladder or any other trouble. His rating in the navy is ship's cooper, and his work brings him in contact with articles of food when he breaks open casks and cases and assists the ship's steward in serving out these rations to the crew.

Below is drawn up a list of ships which the man had joined, the date he joined each, and the cases of enteric fever (diagnosed definitely as such) that occurred in the ships during the time he was employed in them. Fatal cases, when mentioned, have also been noted. This list is compiled from an examination of the medical journals of the ships. The cases were, of course, spread round many hospitals all over the world; hence this table is probably very incomplete as regards deaths, and under-estimation of the actual number of typhoid cases is also probable, as in looking through the records in the ships' journals many cases of enteric may have been missed amongst such entries as simple continued fever and pyrexia.

Table Compiled from the Journals of the Various Ships.

Ship.	Date of joining.	Place where serving.	Cases of typhoid.	Died.
Pembroke	June 15th, 1898.	Home.	—	?
Orlando	Feb. 15th, 1899.	China.	2	?
Pembroke	July 26th, 1902.	Home.	5 (12)	?
Immortalité ...	Aug. 27th, 1903.	Home.	1	1
Endymion	Jan. 18th, 1905.	Home.	1	1
Albion	May 8th, 1906.	Channel.	1	—
Majestic	Feb. 26th, 1907.	Home.	2	?
Venerable	Jan. 7th, 1908.	Channel.	4	?
Implacable	Feb. 2nd, 1909.	Atlantic.	6	2
Pembroke	April 1st, 1910.	Home.	2	?
Cæsar	June 7th, 1910.	Home.	1	?
Formidable	April 4th, 1911.	Home.	28	7
Totals			53	11

Entered the Naval Hospital, Chatham, on April 24th, 1914.

Of the 12 cases in the *Pembroke* during the time this carrier was in the naval barracks, 5 are noted as occurring actually in the barracks and no history of the infection could be obtained at the time; the other 7, however, were reported to have contracted the disease when on leave. All the other cases since 1902 occurred at times when the rest of the fleet was remarkably free from this disease and no source of infection could be discovered. The 4 cases of enteric fever in the *Venerable* in 1908 developed the disease on the following dates: (1) Jan. 9th; (2) Jan. 31st; (3) July 23rd; and (4) Dec. 14th. The medical officer of this ship, writing at the time, notes that Case 3 had not been ashore for one month, and that Case 4 had not been on leave for two months. Six cases were reported from the *Implacable* in 1909; there were two cases only of enteric fever in the rest of the Atlantic Fleet, whose average strength for that year was 9020 men. In his journal for 1909 the fleet-surgeon of the *Implacable* wrote: "I have tried to trace how these men got the disease, but failed. It is quite possible there may be a carrier in this ship, as some cases occurred in the *Venerable* from which this ship's company came. I have gone through the medical history sheets and find there are 4 men who have had the disease in the last three years. When the ship arrives in a port where there is a laboratory I will have them examined." Unfortunately, the responsible carrier had had the disease 11 years ago, and if all the men with a history of enteric fever had been then examined this man might have been discovered five years earlier. The strain of bacillus which this carrier is infected with seems to be a fairly virulent type, as 11 deaths are noted out of the 53 cases he was probably responsible for, and as nothing is known of a lot of the remainder, whether they died or recovered, this mortality, 20·7 per cent., is a very low estimate, though still high. The last case in the *Formidable* epidemic developed enteric on March 12th, 1914. There had been no illness suspicious of typhoid fever in her up to the time of her being lost early in the war.

The following observations were made on this carrier while in hospital. The urine was always sterile. Blood cultures were negative. The Widal reaction was positive up to a 1:150 dilution; it varied very slightly in strength. The appearance of typhoid bacilli in the stools was intermittent, three or four examinations being negative, followed by two or three positive results.

The technique used was as follows. An emulsion of fæces in normal saline was lightly centrifugalised and allowed to stand for two hours in the incubator, the upper layers of the fluid were plated out on Conradi-Drigalski's, Faucus's brilliant green, and Endo's media, and suspicious colonies proved by sugar reactions and agglutination tests. There seems to be no difference in the efficiency of these three media, all giving identically the same positive and negative results.

In 17 examinations of the fæces at intervals of about three days B. typhosus was isolated seven times.

The last point to be noted is the disposal of the patient. From the naval point of view he was not a safe man to have in any ship where any number up to 900 men live under cramped conditions. The only possible course was to invalid him out of the service, after explaining to him as carefully as possible the danger he was to others, and the necessity of avoiding having anything to do with other people's food, and the advisability of disinfecting his hands after his bowels had been open, and if possible the disinfection of his excreta. The medical officer of health of his district was informed of his address, with a view of keeping him under observation as a possible cause of typhoid cases in his district. A course of treatment with a vaccine with prolonged observations would have been tried, but unfortunately the man lives too far away to render it possible.

[1] Jour. Roy. Naval Med. Service, vol. i., No. 1, January, 1915.

A CASE OF MARKED POST-DIPHTHERITIC PARALYSIS.

BY W. ALLEN DALEY, M.D., B.SC. LOND., D.P.H. CANTAB.,
AND
C. V. MCCORMACK, M.R.C.S., L.R.C.P. LOND., D.P.H.

AN interesting case of diphtheria was recently under our care at the Bootle Corporation Hospital. As recovery after such complete paralysis as the patient had is not very common, we think it worthy of record.

The patient, a girl aged 2½ years, was admitted on Nov. 1st, 1915. According to the history she had been quite well until the previous day, when she vomited several times and complained of sore-throat. On admission, the tonsils, the uvula, and the posterior edge of the soft palate were covered with a white, slightly hæmorrhagic membrane. The temperature was 98° F., the pulse-rate 128, and the respirations 26 per minute. No abnormality of the heart or lungs could be detected. Numerous bacilli similar to those described by Klebs and Löffler were seen in the smear from a throat swab, and their presence was confirmed by culture. The patient was given 10,000 units of antitoxin on the day of admission. On Nov. 4th the throat was cleaning, but the heart was very rapid and the first sound soft. She was given half a drachm of whisky four-hourly, which was continued until the 10th, when it was given only three times a day, and was discontinued altogether on the 14th. On Nov. 8th the heart's action was markedly feeble, and the patient was given two minim doses of liq. strychninæ hydrochloridi four-hourly; this was continued throughout the rest of her stay in hospital. On the 15th the throat was quite clean. A definite mitral systolic murmur could be heard; it became fainter until the 19th, when it was no longer present. On the 22nd the speech began to be nasal; it rapidly became more marked, and on the 25th the palate was almost immobile. On this day the heart was beating normally and the knee-jerks were brisk. About the beginning of December the first cardiac sound again became soft, and on the 8th serious vomiting occurred—always an ominous sign in such cases. Small feeds of diluted milk were given, but by this time the palatal paresis was so marked that it was impossible for the patient to take more than very small quantities of liquid by the mouth, and what was taken was not retained. For 24 hours she was fed by the rectum, and then a two-ounce feed of diluted milk was introduced into the stomach through a small rubber catheter; it was inserted directly from the mouth and not through the nose. The next day the patient took five-ounce milk feeds through the tube every three hours without any difficulty. After two days' feeding in this way the general condition had perceptibly improved, but the breathing was entirely diaphragmatic, pointing to a paralysis of the intercostal muscles. Milk feeds, strengthened by Valentine's meat extract and virol, were given regularly through the tube for over three weeks. On the 24th the patient could take single drops by the mouth and the intercostal muscles were again working; the heart was much stronger; the pupils reacted to light, but the eye movements were somewhat sluggish. By this time complete flaccid paralysis of the legs had developed; they were massaged regularly. A week later there was complete external ophthalmoplegia. On Jan. 3rd, 1915, the patient could take alternate feeds by the mouth, and on the 5th tube feeding was discontinued. She could then flex the thighs, but the extensors and flexors of the knees and ankles were still inactive. Movement of the eyes was at this time beginning to return. By the end of January everything had cleared up except for some inversion of the foot; this had disappeared by Feb. 16th, when she was discharged with no sign of paralysis anywhere and able to run about fairly well.

A CASE OF THE OS TIBIALE EXTERNUM SIMULATING FRACTURE OF THE NAVICULAR BONE.

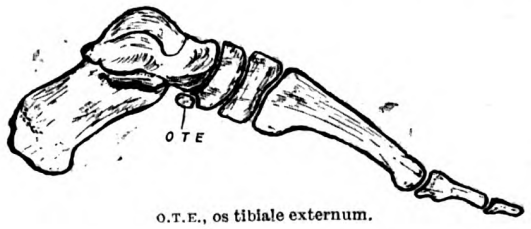
BY C. P. G. WAKELEY, M.R.C.S., L.R.C.P. LOND.,
SURGEON, ROYAL NAVY.

THE history of this case, which may prove of interest to readers of THE LANCET, was as follows:—

A stoker, R.N.R. T., aged 23, was on duty on board his ship on Feb. 16th, when in going aft he caught his left foot in a wire hawser and fell. He was sent to the Royal Naval Hospital, South Queensferry, the next day. On examination there was found to be some swelling of the ankle-joint, and the œdema seemed to have spread up into the muscles of the calf. The foot was very tender, especially on the inner side; the arch was not destroyed in the least. On carefully examining the inner side of the foot a piece of bone could be felt in the region of the navicular bone, but no crepitus could be obtained; it was thought to be a fracture of the tuberosity of the navicular bone. On X ray examination with a screen a small round nodule of bone could be seen in the angle between the navicular bone and the talus; if the patient tried to invert the foot the fragment was slightly displaced. The right foot was screened as well, and, to my surprise, an exactly similar picture of the bones presented itself. The patient was put to bed and lotio plumbi was applied to the foot and ankle. The pain and swelling subsided in a few days, and massage to the muscles of the leg and foot was prescribed. At the end of two weeks the patient was walking about and was soon after discharged to duty. There was no sign of flat-foot and as the bone did not give rise to any painful symptoms excision was not performed.

Formerly the os tibiale externum was regarded as a sesamoid bone in the tendon of the tibialis posterior, but Waldeyer has shown that the term "tibiale externum" should include chondrifications and ossifications of the ligamentous structures and accessory slips of tendon.

The os tibiale externum is one of the most interesting of the anomalies of the tarsal bones, since it represents a first or tibial external digit, the prehallux. It lies in the medial angle between the navicular bone and head of the talus, and is usually situated in the connective tissue of the plantar calcaneo-navicular ligament and the medial process of the tendon of the musculus tibialis posterior. It does not articulate with the talus, but in rare cases it may articulate with the navicular or be connected with the latter by synostosis. It cannot, according to Waldeyer, be regarded as an isolated tuberosity of the navicular bone, because it is always somewhat smaller, although it has the form of the above-named tuberosity. According to Pfitzner,[1] who is inclined to believe that the os tibiale externum is really a sesamoid bone in the tendon of the musculus



O.T.E., os tibiale externum.

tibialis posterior, its greatest diameter is from 2·5 to 19 mm., and it occurs in males 8·3 per cent., and in females 14·9 per cent. The reasons for the preponderance of frequency in the female sex is not explained.

Manners-Smith[2] discusses the mechanical and morphological sides of the question. He regards the bone as composite in nature, formed from the following elements: (*a*) An apophysis growing from the navicular; (*b*) an epiphyseal portion (naviculare secundum) of Grüber; and (*c*) the so-called sesamoid bone in the tendon of the musculus tibialis posterior. He states that the single bone described by Pfitzner as the tibiale externum corresponds in position to the parts described above under (*b*) and (*c*).

Bardeleben[3] has demonstrated the os tibiale externum as an independent cartilaginous nodule in a 2 mm. fœtus. In many mammalia it appears as a constant skeletal structure articulating with the talus. Mouchet[4] states that when present the os tibiale externum is bilateral, and that not infrequently there are no symptoms; in other cases flat-foot occurs and pain may be partly due to that.

[1] Beiträge zur Kentnis des Menschlichen Extremitätenskelettes: V., Anthropolog. Beziehungen der Hand- und Fussmasse, Schwalbes Morphologische Arbeiten, Bd. ii., H. 1, S. 93, 1902.
[2] Journal of Anatomy and Physiology, vol. xli., 1907.
[3] Handbuch der Anatomie des Menschen, Band vii., Skelettlehre, S. 161.
[4] Revue de Chirurgie, 1913, vol. ii., p. 825.

Medical Societies.

HUNTERIAN SOCIETY.

The Relationship of the Medical Profession to the State and the Community.

THE annual discussion of this society was held on March 22nd and April 12th, the subject of debate being the Relationship of the Medical Profession to the State and the Community. Mr. W. H. KELSON, the President of the society, was in the chair, and the proceedings were opened by Dr. F. J. SMITH, who treated the subject mainly from a historical point of view. He came to the conclusion that no serious attempt was made to give the medical profession a standing in the State until the eighteenth century, and, confining his remarks to the United Kingdom, alluded to the provisions of the Apothecaries Act, 1815, the Anatomy Act, 1832, the Medical Act, 1858, and the various Acts which have been passed in connexion with vaccination, infectious disease, and public health generally.

Mr. F. LAWSON DODD pointed out that an ever-increasing proportion of doctors would be requisitioned by the State for public health services, so that the profession must recognise that the individualist régime of medicine had almost disappeared, giving place to methods of coöperation and specialisation which were the direct outcome of scientific medicine.

Dr. T. D. LISTER was moved by Mr. Lawson Dodd's remarks to ask whether disease was still an individual thing and whether patients were to be still regarded as individuals. The science of medicine could and must evolve, he said, but the art of medicine would always remain. He regarded a State Medical Service with distrust. He considered that to improve the relations of the medical profession to the State and the community, a raising of the general standard of medical education was required, a levelling up of the numerous qualifications, and a State qualification as a necessary preliminary to any form of State Medical Service.

Dr. G. E. HASLIP said that the tendency of modern scientific medicine was more and more for combined and institutional treatment. If he were beginning again he would take a practice in a poor district with three or four partners, each a specialist in a particular line. He spoke as a student on the question of State service, but said it was absolutely essential that medical men should ascertain what they really required and organise to obtain it.

Dr. T. D. MANNING spoke as a general practitioner with some panel work and some special experience, and said that five years ago he would have agreed with Mr. Lawson Dodd, but that the profession had now tested the fruits of the interference of politicians. The first steps for the organisation of the profession must come from the inside.

At this point the discussion was adjourned until April 12th when it was resumed by Dr. H. J. CARDALE, who pointed out that the State had now accepted responsibility of the health and welfare of a great number of citizens and had thus rendered it imperative to the general practitioner to abandon his isolated position and to get into touch with modern scientific methods. The treatment of the industrial public under coöperative methods could be by the club system, the panel system, or a State Medical Service. Dismissing the first without comment, he said that the panel system was a compromise which had the merit of doing away with undercutting among members of the same profession. He could not agree with Mr. Lawson Dodd that the panel system perpetuated individualism at undue cost to the community. Whatever the progress of science, medicine would always remain an art as well as a science, and some individualism is therefore essential, but the old isolation of the general practitioner must certainly go if efficiency is to be obtained. Had it not been for the war pathological laboratories for the use of general practitioners would already have been set up in connexion with panel work. The money for these had been voted by Parliament, but it had been subsequently used for other purposes. A nursing system would also have been established by this time. It had been argued that the panel system was a system of first-aid, but with this he could not agree. Under the Insurance Act doctors treated the majority of very serious cases. The advance in science had not killed general practice; specialists were necessary, but so was the general practitioner. With regard to a State Medical Service, his objection was that it abolished the free choice of the doctor, and that he believed the public would desert the State cliniques for that reason. The State service would become a happy hunting ground for mediocrity. He considered that the medical profession ought to put forward a united constructive policy.

Dr. B. A. RICHMOND, having practised with several partners in a poor district for some years, found that the outstanding feature of such practice was that the economic position of the patients made scientific treatment an impossibility. Therefore he had welcomed the National Insurance Act as an endowment of the poor man's doctor, and though the ideals of the Act had not been fully realised, it had accomplished much. The accusation that panel practitioners were incompetent was, he said, false, the effect of the Act having been actually to weed the incompetents out, and he noted that although there were 1500 doctors on the London panel there had only been 303 complaints made in three years. They were directed against 251 doctors, 168 being substantiated. In London, he said, the personnel of the panel should be increased, and he pointed out that officials representing Friendly Societies swamped the Insurance Committees. Future developments must grow, he considered, out of the existing position. Post-graduate training for panel practitioners should be made possible and they should be attached to cliniques in their areas. Medical representation on the National Health Insurance Commission should be augmented.

After some remarks from Dr. THOMAS DUTTON, Mr. M. CURSHAM CORNER, and Dr. ETHEL BENTHAM, Dr. F. J. SMITH replied, drawing particular attention to the speeches of Dr. Cardale and Dr. Richmond. The great difficulty, said Dr. Smith, in the future would be to find enough money for adequate medical service.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

SECTION OF OBSTETRICS.

Myomata from a Case of Cæsarean Myomectomy.—Puerperal Eclampsia.

A MEETING of this section was held on March 24th, Dr. G. FITZGIBBON, the President, being in the chair.

Dr. M. J. GIBSON showed a specimen of Myomata from a case of Cæsarean Myomectomy. The patient was first seen nearly four years ago, when she was 32 years of age, and had been married for nearly a year. She was in very good health, and was not in any way inconvenienced by the condition of her uterus. She menstruated regularly, and there was no discomfort or pain. She did not wish to undergo an operation if she could become pregnant without doing so. The largest tumour, which was then about the size of an apple, was situated apparently in the layers of the left broad ligament and attached to the supravaginal portion of the cervix. It was consequently pointed out to her that there might be trouble during labour if she did become pregnant, and removal of the tumours was recommended. The operation was declined when she understood that there was no reason to believe that she could not become pregnant. She returned within a year for her confinement. The fibroid in the pelvis did not then seem much larger, and it was distinctly softer. It was possible to push it well out of the way and to feel the presenting part of the fœtus, which was the breech. She was anxious to avoid an operation, and the opinion was formed that the tumour would be pulled up during labour, and that it would be possible to deliver the child alive. All arrangements were made for a possible Cæsarean section, and the patient was allowed to go into labour. The labour progressed normally, and the tumour was pulled up satisfactorily. When the os was nearly fully dilated it was possible to feel the tumour above the brim, and the breech entering. The mother and child were then in good condition. About half

an hour later the fœtal heart could not be heard, and examination showed that the cord had prolapsed past the tumour through a fully dilated cervix. The child was extracted at once; there was some difficulty with the fœtal head, but not a great deal. The child was dead. The patient promised to return for the removal of the tumours, but did not do so. She returned six weeks ago for her second confinement. The pelvic tumour was now the size of a small melon, and so much in the way that it was not possible to feel the presenting part, which was the head. A Cæsarean section was performed before labour started. The child was extracted alive and the uterine incision closed. There was no difficulty in removing the tumours, two of which, including the largest, were subserous, the remainder being interstitial. There were five tumours in all. There was no more bleeding than if the uterus was not pregnant, and the extent to which the uterus could be drawn up outside the abdominal incisions made the myomectomy easier than it generally is. The removal of the largest tumour exposed the endometrium but did not open it. The cavities were closed with catgut. It was intended to allow the patient to deliver herself if she should become pregnant again, and it was submitted that Cæsarean myomectomy is the proper treatment for labour obstructed by fibroids when the uterine cavity is aseptic.

Sir WILLIAM SMYLY said that one of the most interesting questions connected with Cæsarean section was whether the uterine scar could be trusted in subsequent labours, and in that respect he considered that this case differed from the general rule, inasmuch as not only had the woman already borne a child *per vias naturales*, but the cause of the previous obstruction having been entirely removed, no unusual strain upon the uterine wall was to be expected.

Dr. T. NEILL said that he remembered a patient in the Coombe Hospital who had a Cæsarean section performed for myoma obstructing labour, and who at a subsequent labour, about 12 months afterwards, was delivered by forceps without any difficulty.

Dr. BETHEL SOLOMONS considered that Dr. Gibson was very unlucky at the first confinement. If he had attempted to deliver the child when the os was dilated before the cord prolapsed all might have been well. He (Dr. Solomons) had reported to the section a case of natural delivery after a former Cæsarean section. He had attended a case in two confinements where it had been necessary previously to remove about one-third of the uterus with myomata. With all these data, however, he thought it would be necessary to perform Cæsarean section in Dr. Gibson's case at subsequent confinements. The only other possible course to pursue would be to allow the patient to progress in labour on an operating-table and to have everything ready for an immediate Cæsarean section. He wished to know the suture material used in the case reported.

The PRESIDENT said he thought a myomectomy after Cæsarean section was better than the usual procedure of hysterectomy. He thought that the patient should be allowed to deliver herself in any consequent confinements. He held the view that when the cervix and vagina had already been dilated by the delivery of a child, and there was no obstruction, the scar in the uterus would hold, but where Cæsarean section was done on a primipara the risk of subsequent labours would be too great.

Dr. GIBSON, in reply, said he did not agree that Cæsarean section was necessary in cases of myomata, except when they were causing obstruction. He reported a case in which the scar of Cæsarean section had given way in the eighth month of a succeeding pregnancy. The incision was closed with interrupted sutures of fine silk, and there was no sepsis. He concluded that the sutures were too close, and probably drawn too tightly in this case, as when this is done he had noticed how the incision became blanched during contractions. He now employed interrupted sutures of fine silk, placed about three quarters of an inch apart, and then two continuous sutures of catgut, the first closing the muscle and the mucous membrane, the second closing the peritoneum and muscle. The silk sutures were then tied. Since then he had had no difficulty with patients who had become pregnant again, and he would allow labour to proceed in such a case when there was no longer obstruction.

Sir WILLIAM SMYLY read a paper on Some Points in Connexion with Puerperal Eclampsia, which led to an interesting debate.

Reviews and Notices of Books.

Manual of Medical Jurisprudence, Toxicology, and Public Health.

By W. G. AITCHISON ROBERTSON, M.D., D.Sc. Edin., F.R.C.P. Edin., F.R.S.E., Lecturer on Medical Jurisprudence and Public Health, School of Medicine, Royal College of Surgeons, Edinburgh. Third edition. London: A. and C. Black. 1916. Pp. 656. Price 10*s.* 6*d.*

IN our previous reviews of this book we expressed the opinion that this work contained all the information necessary for the ordinary pass examinations, and we can now endorse that view. The author has continued to include the subjects of medical jurisprudence, toxicology, and public health in one volume, and experience has shown that the manual meets with appreciation from students preparing for the final examinations; this combined treatment of the two subjects is endorsed by the fact that the subjects are taught, if not by a single lecturer, at least in a conjoint course at many universities and medical schools.

The present edition has been revised and numerous additions have been made. There are two new chapters —viz., one on medical inspection of school children and another dealing with industrial hygiene and diseases due to occupation. Further, many new illustrations have been added, several of them being original. The book is well written, the facts being stated in plain terms, and a sufficient number of illustrative cases have been quoted to add to the interest of the subject matter.

Studies in Anatomy from the Anatomical Department of the University of Birmingham.

Published by the Council of the University and edited by Professor PETER THOMPSON. Illustrated by numerous figures in the text and by 4 plates. Birmingham: Cornish Brothers. 1915. Pp. 208. Price 10*s.* net.

THE University of Birmingham is to be congratulated upon the industry and ability of the staff of its anatomical department, and not less upon the generous care of its Council in enabling good work to be produced in excellent style. The whole volume is remarkably well got up and the plates are very perfect examples of the best methods of colour reproduction. The production of such a volume in these days of war is quite noteworthy. Eight papers are included in these studies, and most of them deal with developmental problems; four of them have previously been published (three in the *Journal of Anatomy and Physiology* and one in the *Birmingham Medical Review*), and the remaining four are for the most part new. Professor Peter Thompson contributes (1) a Description of a Human Embryo, 7 mm. greatest length; and (2) the Development of the Lobus Quadratus of the Liver. Dr. Thomas Yeates has two Studies in the Embryology of the Ferret. Miss Marion Radford is represented by a paper on the Head Notochord and Pharyngeal Bursa in the Ferret and other Mammals. A paper by Mr. Lewis Graham on the Agnathic Fœtus is reprinted from the *Journal of Anatomy and Physiology*. Dr. J. Percy Good publishes a part of his Manchester M.D. thesis on an Inquiry into the Causation of Spina Bifida, and Mr. Bernard Goodwin describes a case of Partial Failure of Torsion of the Intestinal Loop. If in such a volume an individual article might be selected for especial praise, we would point to the first paper by Professor Thompson, which, accurate in details and perfect in illustrations, is a permanent record of a very interesting stage of human development.

MISCELLANEOUS VOLUMES.

WE have received in the course of the last few weeks a large quantity of books of varying size and importance generally dealing with surgical nursing, bandaging, massage, and the technique of first-aid, their publication being obviously due to the large draft made by the war upon the energies of all fully trained nurses and many partially trained attendants, who are instructed to carry out special duties of particular routine. As will be seen, the books

as a whole are carefully written and calculated to be of real use to the particular persons for whom they have been designed.

Anatomy and Physiology for Training Schools and other Educational Institutions, by ELIZABETH R. BUNDY, M.D. (Fourth edition. London: J. and A. Churchill. Pp. 410. Price 8*s*. 6*d*. net), is a thoroughly good book, written by the gynæcologist to the New Jersey Training School, who has been both professor of anatomy in the Women's College of Pennsylvania and superintendent in the Connecticut Training School for Nurses.——*Bandaging*, by A. D. WHITING, M.D. (London and Philadelphia: W. B. Saunders Company. Pp. 151. Price 6*s*. net), is also of American origin, and is written by the instructor in surgery at the University of Pennsylvania. The art of bandaging is very carefully explained, and in each case the reasons for the adoption of a particu'ar bandage in a particular injury or applied to a particular region are fully explained. The book is valuable because many beginners think that the great art of bandaging is to give a pretty surface, the use of bandages to support parts and to exercise local pressures not being always explained to the beginner.——*The Triangular Bandage*, by HOWARD M. PRESTON (London: John Bale, Sons, and Danielsson. Pp. 62. Price 1*s*. net). Mr. Howard Preston is demonstrator of the practical classes at the Polytechnic, Regent-street, London, in connexion with the St. John Ambulance Association and the British Red Cross Society, and in this little work he deals with the application of the triangular bandage. The profuse illustrations and simple instructions make the book extremely suitable for the use of ambulance men and volunteer nurses, while much of the instruction could be unhesitatingly followed by Boy Scouts or Girl Guides.——*Surgical Nursing and Technique*, by C. P. CHILDE, B.A., F.R.C.S. Eng. (London: Baillière, Tindall, and Cox. Pp. xvi.+ 227. Price 3*s*. 6*d*. net), is a small book of which we expressed a favourable opinion on its first appearance seven or eight years ago, and is aimed at a far more highly instructed class. Colonel Childe has written to meet the needs of nurses who, while responsible for the technique of operative nursing, find themselves in private homes where no medical officer is resident. The book contains exactly the sort of practical information that they would require, and it may also be recommended to young house surgeons and advanced students. The book is clearly written and practical.——*A Manual for Nurses*, by SYDNEY WELHAM (London: Mills and Boon. Pp. 230. Price 1*s*. 6*d*.). This is the second edition of a handy little reference-book for nurses. The summaries of anatomy and physiology are so brief as to be of little practical use, but in dealing stenographically with medicine and surgery the author is distinctly successful. The section devoted to nursing proper contains an enumeration of the ingredients of enemata and instructions as to the preparation of poultices, blistering, painting with irritating fluids, and inunction. The book is an epitome of the kind of practical teaching which a nurse in training would receive from her superiors and learn by observation.——*Philip's Popular Mannikin*, edited by W. S. FURNEAUX (London: George Philip. Price 3*s*. 6*d*.), is a key to the model of the human body and might very well be studied in connexion with Mr. Welham's opening chapters. The information and the illustrations are excellent.——*Children's Nursing*, by C. SEYMOUR YAPP (London: Poor Law Publications, Limited. Pp. 118. Price 2*s*. 6*d*. net). Mrs. Yapp is the matron to the Poor-Law Hospital at Ashton-under-Lyne, and this book has been written for nurse probationers with a view to introducing them to a branch of nursing which naturally requires special study. The instructions are precise and properly didactic, for counsel to beginners should always be given in an authoritative manner. The book is also full of wise hints for the maintenance of cleanliness and comfort among the small patients.——*Our Baby: for Mothers and Nurses* (Bristol: John Wright and Sons. Pp. 208. Price 1*s*. 6*d*. net) is on a far lower scientific plane, none the less it introduces to the reader in simple language modern methods of rearing infants, while its appearance in a fifteenth edition proves its popularity.

We have received the fifteenth edition of Lieutenant-Colonel R. J. BLACKHAM'S *Indian Manual of First Aid* (Bombay: G. Claridge and Co. Pp. 196. Price 1 rupee), and also Miss BLOUNT'S *First Aid at a Glance*, an adaptation from the French of a small work containing practical hints in cases of emergency (London: Good, Limited, Burleigh-street, Strand. Price 1*d*.).——*First Aid in the Laboratory and Workshop*. By ARTHUR A. ELDRIDGE, B.Sc., and H. VINCENT BRISCOE, D.Sc. (London: Edward Arnold. Pp. 32. Price 1*s*. net). Mr. Eldridge is a lecturer in chemistry at the Technical Institute, Wimbledon, and Dr. Briscoe is demonstrator in chemistry at the Imperial College of Science and Technology. Both authors, therefore, have had large experience of injuries in chemical and mechanical laboratories, and in this little book they have compiled brief and clear instructions for dealing with such injuries and accidents as are most likely to happen. The book is very brief and very sensible.

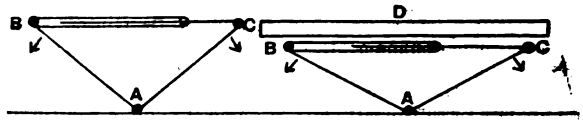
A Handbook of Massage for Beginners (Oxford Medical Publications), by L. L. DESPARD (London: Henry Frowde and Hodder and Stoughton. Pp. 247. Price 6*s*. net), has definitely been written with an eye on the existing situation. Many people are now learning the art of massage in order to help soldiers, and the book has been produced for their easy instruction, being, to a great extent, an abstraction of the author's larger book on the subject. Mr. Despard emphasises the need there will be of massage treatment for our wounded soldiers and for those discharged as unfit to serve further, and properly remarks that massage should only be carried out by those who have obtained the training of a recognised school.

New Inventions.

AUTOMATIC EXTENSION LEG SPLINT.

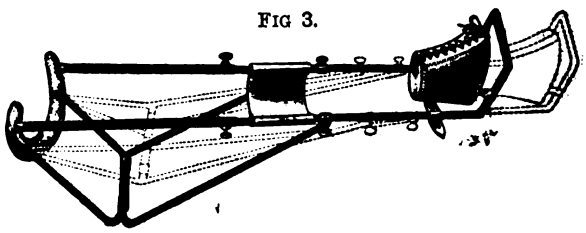
THE principle of this splint is that the weight of the leg is utilised as the extending force. If one imagines a triangle, A B C (Fig. 1), made of thin iron rods with the side B C extensible and hinge joints at A B C, when the triangle is resting on A it is obvious that any weight resting on B C will tend to increase the angle A and, therefore, extend the side B C (Fig. 2). Thus, if a fractured limb, D, rests on

FIG. 1. FIG. 2



B C, with the two ends fixed at B and C respectively, the weight of the limb will increase the angle A and the distance B C till the muscular tension prevents further extension, and as the muscular tension is proportional to the strength and size of the muscles, and, therefore, to the weight of the leg, the amount of extension produced is approximately the amount required, and decreases automatically as the muscles waste and their tone and weight diminish. In this way over-extension, which obviously blocks the lumen of small and valuable capillaries and lymphatics both by lateral pressure and longitudinal tension, especially at the site of fracture, tends to be avoided.

FIG 3.



The splint is composed of a Thomas knee splint frame, telescopically extensible. The upper end is fixed to the leg by a 1/2 Thomas ring and it is fixed below the fracture by an anklet, bandage, or slung in the usual manner, and the

limb supported at the seat of fracture by perforated zinc or lint, and the splint is supported by two hoops of iron forming a V and connected to each other and to the splint by hinge joints. One arm of the V is connected above, the other below the seat of fracture. The weight of the leg tends to increase the angle of the V and thus extension is obtained.

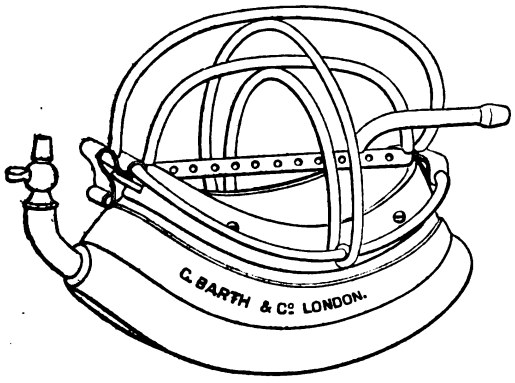
The advantages of this apparatus are: (1) There is no need to move the limb or splint in slightest degree for dressing or irrigation; (2) easy access obtained to all parts of the leg; (3) no absorbent dressings are needed—any discharge can be caught in a dish underneath; (4) extension decreases as muscles waste; and (5) extension simplified in the presence of sores or cellulitis. The same splint is applicable to most fractures and any length of leg, and to lift the patient the whole thing can be made a single unit by fixing the telescopic extension by a screw, and in a similar way the height of the leg from the bed can be adjusted. If additional extension is desired, hang weights on end of splint. The chief disadvantages are that it cannot be used on a full water bed or if the knee is desired flexed.

The splint is made by Messrs. Krohne and Sesemann, Duke-street, London.

THOMAS WARRINGTON, M.R.C.S., L.R.C.P. Lond.,
Captain, R.A.M.C. (S.R.).

AN ECONOMICAL "OPEN" ETHER MASK.

THE mask for the administration of "open" ether here illustrated will, I think, be found to be economical in use and easy to hold in position. The dermatite face-piece (with its rubber air-pad) fits the face closely; consequently the eyes are not exposed to ether fumes. The outer cage is attached by a hinge to the nasal end of the face-piece.



Some four to six folds of gauze are placed between the inner and outer cages and clamped down by the catch at the oral end. The outer cage affords a convenient rest, clear of the ether-soaked gauze, for the anæsthetist's thumb (or fingers) when pressing the mask in position, and when concentration of vapour is required serves to keep the overlay of towel or lint clear of the wet gauze, thus keeping it dry and the air beneath it comparatively warm. The perforated tube running from the nasal to the oral end is for the admission of oxygen or chloroform vapour from a Junker if required.

The mask has been made for me by Messrs. Barth, Poland-street.

A. BERESFORD KINGSFORD, M.D. Durh.
Upper George-street, W.

A METHOD OF IMPROVISING INTESTINAL CLAMPS.

WHERE intestinal clamps are not available the following substitute will be found to answer the purpose well, and is quite easy to make and manipulate. Two equal pieces of



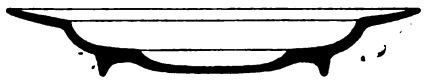
large, strong clock spring, from six to ten inches long, according to the length of clamp required, are covered with indiarubber tubing of a suitable size and thickness. The two pieces are bound together (A) with strong silk or silkworm gut at one end, so that when the opposite ends are brought together the springs press against one another for their whole length uniformly. The intestine, stomach, or whatever requires to be clamped (B) is brought between the two springs and held in a clamped position by nipping the other ends of the springs with an artery forceps (C) or small clamp, when it can be tied with silk or silkworm gut and the forceps removed. The pressure can be regulated by the strength of the clock spring used. For gastro-jejunostomies or intestinal anastomoses the two sets of springs can be simply tied together by leaving the silk or silkworm-gut ends long, or may be held together by artery forceps.

E. R. ROST,
Peshawar. Lieutenant-Colonel, I.M.S.

PLATES FOR ONE-ARMED USE.

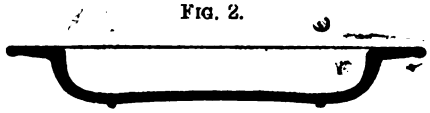
I HAVE devised a couple of plates which seem to be of use to such of our sailors and soldiers as are deprived of the use of one arm. One is a soup-plate with a depression in the centre (Fig. 1), from which the last two or three

FIG. 1.



Section of soup-plate.

FIG. 2.



Section of meat- or pudding-plate.

spoonfuls of soup can be easily removed. The other is a plate for solid food which has vertical sides and an overhanging rim (Fig. 2). Against this pieces of meat or pudding can be pushed without any risk of their toppling over the edge of the plate. For convenience of commerce it has been suggested that the plates should be named, and "Unimanus" has been suggested (cf. Livy 35. 21 and 41. 21), but it seems simpler and certainly shorter to call them "manchot" plates.

The plates have been made in several styles—some as cheaply as possible—and all may be obtained from Messrs. Thomas Goode and Co., 19, South Audley-street, London, who are solely financially responsible and have kindly consented to devote rather more than 20 per cent. of the profits to the Serbian Relief Fund.

Cambridge. A. E. SHIPLEY.

THE ALEXANDRA PALACE INTERNMENT CAMP.

DURING the last year a number of reports have been current of the conditions, social and sanitary, existing in the internment camps. These have often contained conflicting statements, and we therefore take the opportunity which has been afforded us of placing on record a brief account of first-hand information concerning the best known of these camps for civilians—viz., the Alexandra Palace in this country.

The Alexandra Palace, as every Londoner knows, crowns the steep ridge of Muswell Hill, and in this healthy, wind-swept locality 2000 interned civilian aliens have succeeded to the quarters of the friendly Belgians, who were at first housed there.[1] They occupy for the most part the ground floor, where vast halls are split up for disciplinary purposes to hold battalions of 100 to 600 men. Most of them were residents in London or the Home Counties at the time the war commenced, and the numbers have been somewhat reduced by repatriation of invalids and old men.

[1] THE LANCET, Oct. 3rd, 1914, p. 867.

The halls are divided up by partitions, on the tops of which stand pot hyacinths and cactuses, suggesting at first sight some kind of flower show or exhibition. On each side of the screens are the low beds, consisting of three longitudinal planks raised an inch or two from the ground, with straw mattress, pillow, and blankets upon them. Ventilation strikes the incomer as distinctly good. The heating is carried on by means, for the most part, of hot-water pipes beneath the floor, which produce an upward current of air passing out at the louvres in the high roof and drawing in fresh air through the cracks in doors and windows without the necessity of any artificial system. The lavatory arrangements appear adequate. The original water-carriage system has been extended and washing accommodation is abundant, while douches with hot and cold water are laid on, to the use of which no restriction is applied. Each battalion of prisoners has its own particular portion of the Palace ground to exercise in, the area being marked off by wire entanglements, besides the use of the Italian garden in the Palace. At the time of our representative's visit the wind was cold in the extreme, with driving sleet, but several hundred men were pacing in the open in threes and fours around an enclosure protected from the wind at the east end of the Palace building; some were engaging in a friendly wrestling match, watched by the sentries who stood by. As closing time approached the sentries drew in, warning the men back again to their quarters.

Occupation for these men, who are all interned civilians, is, of course, purely voluntary. Several squads were engaged in removing turf and making roads, being paid by the Palace trustees for this work. Some of the aliens assist with the cleaning and housework. Large numbers are content with lying on beds idling about, or playing games. A considerable minority occupies a narrow enclosure running round the whole extent of the hall with benches on each side, on which skilled handiwork is carried out. Some are engaged in carving and fretwork inlay of no mean quality; others make wooden toys, models of boats and ships, and the like; while others are occupied more seriously in tailoring and cobbling for their comrades. All the cooking is done in the kitchens by interned civilians who command a wage for doing so. The regular ration includes 8 ounces of meat and 1½ lb. of bread per diem. The bread was noted to be wholemeal and of excellent quality, supplied by a contractor from outside. At one time some complaint was made with regard to the quality of the bread, and the contractor was changed. Those who can afford to pay may obtain food of any desired kind at the canteen; 10 per cent. of the canteen proceeds are allotted to delicacies for the remaining inmates, and especially to the occupants of the hospital. We understand that the well-to-do inmates are kindly disposed towards the others, especially in assisting them with a more varied diet. Vegetables supplied in the ordinary ration are limited to potatoes and dried beans, and no special dietary is provided for the hospital.

At the Post Office in the building parcels sent from the men's homes are examined; it is at the same time the library where English and German books can be borrowed. English newspapers circulate freely. The only German journals in evidence were of pre-war date. There is naturally an abundance of musical talent, and an orchestra of 40 instruments is formed which gives good music on Sunday afternoons. Monthly visits are allowed to the prisoners by their friends, and as these visits are spread out over the month, a constant stream of outsiders arrives each afternoon.

The hospital accommodation occupies three separate rooms at the end of the building, with a large consulting room and dispensary adjoining. Of the 35 beds in the main ward only 4 were occupied, other cases being convalescent and sitting outside in the Italian garden. Of 10 tuberculous cases only 2 had positive sputum, and these were being isolated from the rest of the men. A small room is allotted to those suffering from active forms of venereal disease. These were in the early days sent to the German hospital for salvarsan injections and are now continuing with internal mercurial treatment. The isolation hospital in the grounds is now empty; a single case of typhoid contracted before admittance and one of diphtheria have been the only serious infectious complaints; as yet influenza, if present, has occurred in very mild form. The prison in the main building is also empty, there being at the present time no disciplinary difficulties. Large glass cases in the entrance halls contain specimens of the work of prisoners, some bearing patriotic mottoes such as "Gott, Ehre, und Vaterland," others referring to the period of their detention, "Zur Erinnerung meiner Gefangenschaft," and so on.

The courtesy shown by the officials in conducting our representative all over the very large establishment and in showing us all the details contained therein is gratefully recognised.

ROYAL MEDICAL BENEVOLENT FUND.

AT the last meeting of the committee held on April 11th 26 cases were considered and £234 granted to 22 of the applicants. Two additional annuitants of £20 each were elected, to be known as the Margaret Harker-Smith Annuitants, the committee having recently received the amount of £1000 from the trustees. The following is a summary of the cases relieved:—

Widow, aged 70, of M.R.C.S. Eng. who practised at Heywood and died in 1894. Was left totally unprovided for, and earns a somewhat precarious living by acting as a day cook. Owing to age is unable to obtain permanent work. Relieved twice, £14. Voted £12 in 12 instalments.—M.R.C.S. Eng., aged 83, who had practised at Fulham. Practically blind, and has to help to support one of his son's family. Only permanent income a small pension from another society and the Old Age Pension. Previous relief five times, £34. Voted £12 in 12 instalments.—Daughter, aged 58, of L.S.A. Lond. who had practised in London and is now a pensioner of the Fund. Applicant has tried to make a living by keeping an haberdashery shop, but owing to the increased cost of commodities is unable to make it pay. Father lives with daughter. Voted £10 in two instalments, and referred to the Guild.—M.R.C.S. Eng., F.R.C.S. Edin., aged 76, married, and has practised at Lincoln and London. Owing to age and inability to get about is unable to practise. Only income a small annuity. Requires help towards the education of his youngest daughter, aged 16. Two other children, married, and unable to help. Voted £12 in 12 instalments.—Widow, aged 63, of M.R.C.S. Eng. who practised at Burton-on-Trent and died in October, 1915. Owing to long illness of husband, and three sons having joined the army, all her savings are exhausted. Receiving a little help from her sons' employers and a little from dividends. Voted £5.—Widow, aged 74, of L.R.C.P. Edin. who practised at Ross, Mon., and died in 1889. Was left totally unprovided for, and only income a pension of £15 from another society. Lives with two nieces who have to earn their own living. Voted £5 and referred to the Guild.—Widow, aged 45, of M.D. Edin. who practised at Sheffield and died in 1906. Was left unprovided for, and health is very indifferent. Has recently undergone an abdominal operation. One son, aged 16, at school and maintained by relatives. Previous relief twice, £20. Voted £10 in two instalments.—Widow, aged 59, of M.R.C.S. who practised in London and died in 1904. Applicant suffers from chronic rheumatism and general ill-health, and has no income. Previous relief 13 times, £133. Voted £15 in 12 instalments.—Widow, aged 62, of L.R.F.P.S. Glasg. who practised at Rothesay and died in 1899. Endeavours to make a living by taking in lodgers, but has not been successful of late. Suffers from rheumatism and neuritis. Relieved twice, £24. Voted £12 in 12 instalments.—Widow, aged 64, of M.R.C.S. Eng. who practised in London and died in 1914. Was left with insufficient means, and has an invalid daughter to keep. Other children only able to help slightly. Relieved twice, £24. Voted £12 in 12 instalments.—Daughter, aged 54, of M.R.C.S. Eng. who practised at Newport, Mon., and died in 1892. Is blind and health indifferent. Only income a pension of £21 from another society. Relieved five times, £60. Voted £12 in 12 instalments.—Widow, aged 46, of M.B. Edin. who practised at Strathspey and died in 1910. Was left quite unprovided for, with four children ages 9–17. Tried to make a living by keeping a boarding house, but has recently had to give it up. Only permanent income a small pension from another society. Relieved five times, £50. Voted £10 in two instalments.—Daughter, aged 67, of M.D. Edin. who practised in Lincolnshire and died in 1898. Is matron of an orphanage, but owing to lack of subscriptions her salary has been suspended. Relieved once, £5. Voted £12 in 12 instalments.—Daughter, aged 58, of M.D. Edin. who practised at Kirkdale and died in 1867. Is a dressmaker, but owing to indifferent health her business has declined, and she cannot make sufficient to meet expenses. Relieved once, £12. Voted £12 in 12 instalments.—Widow, aged 68, of M.R.C.S. Eng. who practised at Sheffield and died in 1884. Has endeavoured to make a living by teaching languages, but owing to the war her pupils have left her. Has a small pension from another society. Relieved five times, £25. Voted £12 in 12 instalments.—Daughter, aged 50, of F.R.C.S. Eng. who practised at Biggleswade and died in 1890. Suffers from chronic gastritis and epileptic fits. Only income £20 from another society. Relieved 17 times, £153. Voted £12 in 12 instalments.—Daughter, aged 60, of M.R.C.S. Eng. who practised at Peckham and died in 1886. Owing to the weak state of her health she is unable to undertake any permanent work. Lives with sister, who has to earn her own living and is unable to help applicant. Relieved 18 times, £209. Voted £12 in 12 instalments.—Widow, aged 58, of M.R.C.S. Eng. who practised at Sydney, N.S.W., and died in 1901. Has no income, but receives occasional help from friends. Has a house in the country which she cannot let owing to its bad condition. Has one daughter, a professional singer, but owing to the war she cannot obtain any engagements. Relieved twice, £20. Voted £10 in two instalments.—Widow, aged 68, of M.R.C.S. Eng. who practised in London and died in 1898. Endeavours to make a living by taking in boarders, but has been unsuccessful of late owing to ill-health, applicant suffering from a cancer. Has five daughters, all unable to help. Relieved 17 times, £205. Voted £12 in two instalments through the Guild.—Widow, aged 53, of M.B. Aberd. who practised in Warwickshire and Australia and died in 1909. Was left unprovided for, and only help a little from relatives. Has three children, ages 29 to 31, but none able to help. Applicant is suffering from asthma and heart trouble. Relieved seven times, £73. Voted £12 in 12 instalments.

Subscriptions may be sent to the honorary treasurer, Dr. Samuel West, at 11, Chandos-street, Cavendish-square, London, W.

THE LANCET.

LONDON: SATURDAY, APRIL 29, 1916.

The Registrar-General's Annual Report for 1914.

IN a prefatory address to the President of the Local Government Board Mr. BERNARD MALLET, the Registrar-General, expresses regret that his endeavours to expedite the publication of his annual report for 1914 have been defeated by the exigencies of war. He tells us that military requirements have led to the imposition of new and unaccustomed duties on his department, as well as to the serious depletion of his staff by the enrolment of many of its expert members. Out of 116 men in this Government department not fewer than 62 are already serving with the colours, whilst 12 have been detached for war service in other departments. Altogether 64 per cent. of the men of military age have been withdrawn from the General Register Office, and the residue includes several men who have been refused by the military authorities for medical reasons. These losses have been met by the closing down of all work not immediately required, by overtime employment, and by the substitution of female clerks for male. In spite of increasing pressure on the department occasioned by the war, it is satisfactory to hear that in certain directions material improvement has been achieved in the period under review. The Registrar-General has taken pains to minimise the inconvenience of delay in the issue of his complete report by accelerating the publication of the "Annual Summary" for the same period—a document which will be found to convey important information not otherwise available to those responsible for the preservation of the public health. For the information of those unfamiliar with this publication, it may be useful to mention that it is now published within about three months of the close of the year to which it relates. The accuracy of the provisional numbers there given depends on returns by the local registrars, who are mainly laymen. But in the preparation of the official report, which is largely a medical function, these numbers are revised by comparison with the statutory registers deposited in Somerset House; they are analysed in greater detail, as well as, presumably, with greater accuracy, than had been possible in the production of the earlier publication. For these reasons it is obvious that the summary can never be accepted as a substitute for the elaborate official report.

With few exceptions the vital statistics of 1914 may be considered satisfactory. The marriage-rate, like that of 1912 and 1913, showed a substantial rise on the average for 1908–11, and the provisional figures for 1915 indicate a further considerable rise. In order to compensate as far as possible for the casualties of war it is necessary to maintain at the highest standard the constitution of the general population; and in this relation the persistent decline in English fertility demands scientific consideration. In 1914 a further falling off in the fertility of English mothers is recorded. In 1876 the rate of birth attained its highest point—namely, 36·3 per 1000 of the population—since which date it has fallen, with few exceptions, continuously from year to year. In the year 1914 it was only 23·8, being the lowest rate on record; it was below the average rate for the last complete decennium by not less than 3·4 per 1000, a very serious decline. The general mortality of 1914 in England and Wales was 14·0 per 1000 living, without distinction of age or sex; it was below the decennial average by 0·7 per 1000. Except in the years of childhood males experience a higher mortality than females, although the excess is very unevenly distributed over the country. The fall in mortality has been rapid since 1891–5, when it stood at 18·5 per 1000. Up to the age of 35 for males and of 45 for females the mortality of 1914 at each period was only half that recorded 50 years ago, but after these ages the fall was only slight. Of the total deaths 17·8 per cent. were those of infants in their first year; their rate of mortality therefore was equal to 105 per 1000 births. Infantile mortality is ordinarily higher in the town than in the country, but the infant mortality of London, the centre of the largest urban population in existence, continues lower than that of the country at large. In view of its constancy from year to year the geographical variation of infant mortality in England and Wales is remarkable. In each sex, and in every class of area, the rate continues highest in the north of England and lowest in the south, the position of the Midlands being intermediate. Even the rural districts of the north record a higher rate than that of the metropolis, the excess being greater in the male sex. Illegitimacy is known to exercise a powerful influence on infant life, and in 1914, as in previous years, the mortality of illegitimate infants was about twice as high as that of children born in wedlock. The excess was highest at ages under three months and least in the later months of the first year of life.

Respecting the mortality from the common infectious diseases the Registrar-General writes briefly, probably because detailed information respecting their incidence and fatality has already appeared in the annual summary which was published in April, 1915. The death-rates from these diseases, with the single exception of diphtheria, were below the average. Diphtheria was responsible for greater destruction of life than usual, and in its regular tendency to excessive prevalence in the same area from year to year this disease strongly resembles enteric fever. The loss of life due to tuberculosis in 1914, although somewhat greater than in the preceding year, was below the average in the latest quinquennium by nearly 14 per cent. The fall in mortality was shared almost equally by both sexes, but the rate among

males continues to exceed that of females by about one-third. As in former years the excess was far greater in the chief towns than elsewhere, being 66 per cent. in London against 4 per cent. in rural England. More than three-quarters of the total mortality from tuberculosis was due to the pulmonary form of that infection, which was somewhat less fatal than the average. Among other forms, tuberculous meningitis caused a lower mortality than in any previous year; it now amounts to not more than one-third of the rate prevailing 60 years ago. The mortality from tuberculous peritonitis was lower than in any previous year except 1912; the rate has been rapidly falling for the last 30 years, and now averages only one-third of its former amount. There is no abatement of the suffering and fatality due to malignant disease in its various forms. In 1914 there was again an increase in cancer mortality among males, especially those at advanced ages; there was also a slight increase among females, especially those above the seventy-fifth year of life. Very elaborate analysis continues to be made of the mortality from this terrible disease, and no pains have been spared by the Imperial Cancer Research Fund to improve our knowledge of its nature. We notice with pleasure the Registrar-General's acknowledgment of the assistance he has received from medical officers of health in the compilation of his report, and especially for their coöperation in securing accurate transfer of deaths, with the object of improving the vital statistics of our country.

The War and Epidemic Diseases in Galicia.

THE miseries attending military operations in the eastern war-zone have been exemplified by what has occurred during 1915 in the Austrian province of Galicia, which has a large industrial population, and where, in addition to destruction of property and the shortage of food supplies, certain dangerous diseases have been epidemic. Many villages and farmhouses have been burnt to the ground, the cultivated fields have been devastated and the crops destroyed, business premises have been demolished and many of the inhabitants have fled into the already overcrowded towns where provisions are scarce and housing is inadequate; to crown all, cholera, exanthematic typhus, and small-pox have been widely prevalent. The Austrians themselves have estimated the permanent damage done to property in Galicia up to the end of 1915 at more than £80,000,000.

Although the usual sources of information as to infectious diseases in Austria are closed, numerous reports published in Vienna filter through neutral countries to England, and from these accounts it appears that cholera has been prevalent in Galicia during the summer months of the past year, subsiding with the advent of the cold weather. It is, however, probable that there will be a recrudescence of the epidemic when the seasonal conditions become again more favourable for its spread. Approximately about 30,000 persons were attacked by cholera in the province during the year 1915, but the number of deaths has not yet been stated. The majority of the sufferers belonged to the civil population, the military escaping, probably as a result of the anti-cholera inoculations carried out before the epidemic had developed. It is surmised that the cholera infection was introduced into Galicia from Russia. It is a well-known fact that exanthematic typhus is endemic in this province, about 2000 cases on an average being reported annually. But in 1915 the number of attacks rose to 9000, increased in the first two months of 1916 by 2354 more cases, making a total of 11,354. The fatality of the disease has not been reported, but it is probable that it was not less than 20 per cent. As with cholera so with typhus, the victims were chiefly among the civil population, famine, overcrowding, vermin infestation, and general misery assisting in the production of the epidemic. Small-pox has been prevalent in Galicia almost throughout the whole of 1915, but it assumed more serious proportions at the beginning of 1916. Up to the end of the month of February of the present year about 32,000 persons had been attacked among the civil population with whom vaccination is generally neglected; the troops were not seriously affected, vaccination and re-vaccination being performed at the beginning of the military service of each recruit. The number of fatal cases of small-pox which occurred in Galicia during 1915 has not yet been published, but the prevailing conditions are such as to be likely to enhance the virulence of any current infection and increase its fatality. As showing the proportions which this epidemic is now assuming, it may be mentioned that in January and February of the present year the number of small-pox cases reported to the authorities amounted to nearly 12,000.

From these facts it appears that apart from death and disablement of soldiers on the battle-fields of Galicia, many of the inhabitants of the province have lost their homes and sources of employment through the so-called "military necessities," and many of them are suffering from famine and other miseries, as well as being ravaged by such dangerous epidemic diseases as cholera, typhus, and small-pox, which history has shown often follow like vultures in the track of armies in the field.

DONATIONS AND BEQUESTS.—By the will of the late Mrs. Harriet Harris, of Hackney, who left estate of the gross value of £10,428, the Queen's Hospital for Children, Hackney, the King's Nursing Home, and the Home and School for the Blind, Upper Clapton, will each receive a fifth of the residue after a few legacies and bequests have been made.—The late Dr. Abraham Cross Godfrey, of Broom Hill, Dripsy, Co. Cork, has left £1000 each to the South Hants Hospital and the South Infirmary, Cork.

THE CHADWICK PUBLIC LECTURES.—The next course of Chadwick Public Lectures will begin on Saturday, May 6th, when Miss Lilian Barker, lady superintendent at Woolwich Arsenal, will take for her subject Housewifery in the Army, Camp Kitchen, Economy, and the Effects and Defects of Munition Work for Women. The lecture will be delivered at Bedford College, and Sir William Collins will preside.

Annotations.

"Ne quid nimis."

LUNACY IN EGYPT.

Dr. J. Warnock has now issued his annual report,[1] giving a brief account of work done. He has been appointed consultant to the British army in Egypt and he has had to make special arrangements for the treatment of British soldiers who were mentally affected. The report gives evidence of steady progressive work and shows the persistent and untiring energy of Dr. Warnock, who has been obliged to do so much extra work with a reduced staff. He points out that the admissions for the year have been fewer and he is inclined to think that the chief dangerous vagabond lunatics are now under care. The admissions once more exceed the accommodation by 467 patients, and again a large number of uncured patients, 487, have been discharged to the care of their friends. Dr. Warnock reports that his admissions of fresh cases for the year in fact were 1036; this is a larger admission list than that of any British asylum. One hundred military mental cases were treated during 1915, and the tables as to forms of insanity and of the attributed causes are interesting. The majority were depressed and melancholic, the Indian contingent providing a larger proportion of these. As usual there was a considerable number of patients admitted who had suffered from violence, and 16 employees were injured by aggressive patients. Some patients were admitted as voluntary boarders, and this appears to point clearly to a better understanding among Egyptians of the object of the asylum. Lectures and demonstrations were given not only to medical students, but interesting medico-legal cases were demonstrated to the law students, and Dr. Warnock acted as examiner in forensic medicine at the School of Medicine. Of late years the work has been increased and made more trying by the reception of criminals supposed to be insane. It is a remarkable fact that of 33 male and 4 female convicted prisoners sent for observation 19 males and 1 female proved to be sane and were returned to prison. Of 50 males and 9 female accused persons sent for examination 15 males and 1 female were found not insane. An interesting table gives the forms of insanity associated with the crimes. In this it is noteworthy that the pellagrous insane seem to tend to murderous violence. The recovery-rate is small, but this is partly accounted for by the discharge of uncured but improving cases to make room for more urgent ones. Of the 873 admissions hashish provided 47, while the pellagrous insane were 135 and the general paralytics were 57. Of the hashish patients only one was a woman, of the pellagrous 75 males and 60 females, and of the general paralytics 11—that is, nearly 25 per cent.—were women. The report has been prepared with the greatest possible care. The tables exhibit clearly the chief points as to causation of the disease and the causes of death. A good proportion of post-mortem examinations were made, and a skilled pathologist—a young Egyptian—did excellent coarse pathological as well as microscopical work. Dysentery was again common and was treated with Dr. M. A. Ruffer's antidysenteric serum; 68 cases recovered and 18 died. Both typhoid and typhus fevers occurred in the asylum with some deaths. Blood examinations were made and examinations of excretions were also carried out. Preparations have been made of the nervous tissues of pellagrous patients, and later reports will be made. Wassermann tests were carried out at the Laboratory of Public Health. Of 223 cases suffering from various forms of insanity 94 gave a positive reaction, but the full report on this line of work will be developed later. There is accompanying Dr. Warnock's report a shorter report of the work done at the sister institution at Khanka. The present accommodation there is for 400, but 700 have been received at a time. The usual tables of causation, forms of disease, and modes of treatment are given, and very complete information as to the uses made by the full electrical plant for the various needs of the asylum. It is a great difficulty that there are no convenient roads from Cairo to Khanka, but no doubt this will be met and gradually, under Dr. H. W. Dudgeon, a large asylum will be carried on under more suitable conditions than could prevail in the old buildings. The new buildings are specially arranged for their object, whereas the parent institution was adapted from an old palace. The future of Egyptian lunacy is hopeful, and when peace is restored progress will be more rapid.

[1] Report for the Year 1915. Government Press, Cairo.

BULLET IN THE RIGHT AURICLE; OPERATION; SURVIVAL FOR TWO DAYS.

DURING the present war wounds of the heart have been fairly frequent, and in some cases the lack of serious results has been a matter of considerable surprise. The diagnosis when the bullet remains in the heart is rendered certain by the X rays. Usually the missile is only a small fragment, and it is the ventricle which is damaged. But in the case to be recorded it was the auricle which received the bullet, a much graver condition. The soldier was wounded on May 14th, 1915, when 1500 metres from the German trenches, the bullet entering the right subclavicular region. He immediately felt a violent pain of a pricking character in the heart, and then fainted away. For some days he lay in an extremely grave condition, with occasional hæmoptysis. There was severe retrosternal pain lasting continuously for hours and accompanied by intense headache. Gradually he improved, and by the end of July could get about, but any effort was likely to cause faintness and urgent dyspnœa. The entry wound had healed; the retrosternal pain, however, still persisted. On Sept. 27th examination showed no demonstrable changes in the heart; there was no abnormal pulsation; the pulse was variable in rate, usually at 60, but on slight movement rising to 100. There were diminished breath sounds at the base of the right lung. X rays demonstrated the bullet resting definitely in the right auricle, a skiagram showing this clearly. The scar of the wound was in the third right intercostal space, two fingers' distance from the right edge of the sternum. On Oct. 13th the patient developed acute myocarditis. There were pyrexia, some evidence of pericarditis, and severe cardiac pain. The area of cardiac dullness was increased and the rhythm disturbed, long pauses occurring. On Nov. 1st the patient was better, and on the 9th it was decided to operate and remove, if possible, the bullet. The central mass of the sternum was removed, with the third, fourth, and fifth costal cartilages on either side. The considerable hæmorrhage from branches of the mammary

artery was controlled before the pericardium was opened. Numerous pleural adhesions existed on the right side. An incision 7 to 8 cm. long was made. The pericardium was found to be adherent. With the finger the adhesions could be separated without difficulty over the surface of the ventricle, but over the auricular surface they were of some density and could not easily be removed. It was then easy to feel the bullet, the point of which was situated just above the opening of the inferior vena cava in the wall of the auricle, and enclosed or ensheathed in a hard mass of tissue. At this stage the general condition of the patient occasioned much alarm. There was intense pallor and the pulse became almost imperceptible. The heart also showed irregular tumultuous movements. The organ was carefully moved over a little towards the left, which rendered the site of the bullet more accessible, and a pair of forceps was placed superficially to prevent hæmorrhage when the bullet should be extricated. Unfortunately the tissues in this region were friable on account of the adhesions; suddenly the auricle ruptured, and a startling welling up of black blood immediately followed. The operator at once placed the left forefinger into the breach, and after a time managed to unite the edges with a small covered clamp. The bullet was then quickly removed with a bistoury and sutures were inserted. Tampons were placed in the neighbourhood of the lower angle of the sternum and an obturator construction closed up the thoracic anterior wall. The operation lasted 50 minutes. With the closing of the pericardium the general condition of the patient improved, and the pulse became regular at 120, respiration 25. For the rest of the day there were pains in the chest. At night the pulse was 140; no faintness. Transfusion of blood was carried out to make up for the loss when the auricle ruptured, estimated at about 200 grammes. The pulse slowed a little and the patient improved somewhat. The following night was also good, but the thoracic pains continued. Hyperglucose serum was given; the pulse, however, accelerated. The next day, Nov. 11th, the temperature rose, and later the patient died. The remarkable fact brought out in the necropsy was the vigorous fibrosis which had surrounded the bullet, resembling a "veritable fibroma." The capsule surrounding the bullet averaged 1½ centimetres in thickness. Only by this pathological process could the bullet, which, weighing 8 grammes, was 28 millimetres long and 8 millimetres in diameter, be held in the auricular wall, which normally is only 2 to 3 millimetres in thickness. A full account of the case has been detailed by Dr. Couteaud and Dr. Bellot in the *Revue de Chirurgie*. It will be interesting to see whether more success may follow similar operations, which must demand a maximum of manipulative dexterity and confidence on the part of the operator.

NON-FATAL FRACTURE OF THE AXIS.

Dr. F. W. O'Brien has recorded in the *Boston Medical and Surgical Journal* a case of the rare condition of non-fatal fracture of the axis. A boy, aged 7 years, was admitted into hospital with a history of having fallen from a tree five days before and striking the ground on his back. He complained that he could not move his head without pain. He adapted himself to this condition by supporting his jaw along the ramus with his hand. In this way he was able to turn his head more freely. The pupillary and other reflexes were normal and there was no paralysis or disturbance of sensibility. Pressure over the second and third cervical vertebræ was painful. Radiography showed a complete fracture of the laminæ of the axis, and an orthopædic support was applied. After five weeks this was removed, and radiography showed such excellent union that an observer might doubt that there had been any fracture. At the time of the report the child was playing about as if nothing had happened. Mixter and Osgood, in reviewing the literature of "Traumatic Lesions of the Axis and Atlas,"[1] have called attention to the large amount of room for the spinal cord in this region, which may account for the absence of symptoms in certain cases of cervical injuries. In injuries of the axis the mortality seems to depend on involvement of the odontoid process. In 6 out of 8 fatal cases recorded by Mr. E. M. Corner the odontoid process was broken, while in 10 non-fatal cases fracture of the odontoid process occurred but once.

INFLUENCE OF PITUITARY FEEDING UPON GROWTH AND SEXUAL DEVELOPMENT.

THE clinical evidence of the effect of the pituitary gland on growth and sexual development is well known, but experimental feeding with and injection of pituitary extracts has given contradictory results. Thus Crowe, Cushing, and Homans found that subcutaneous injections of extracts of the whole gland or of the posterior lobe were apt to produce emaciation. On the other hand, Caselli could find no effect. Schäfer fed young rats with the anterior lobe, which seemed to produce increased growth, but more recent observers reported negative results. Bohenroth is the only writer who investigated the effect on the genital system. He found that hypodermic injections of pituitrin produced in rats premature and extensive development of the genital system, particularly of the testis and sexual over-activity, but in young dogs the results were negative. This may have been due to a difference in activity of the extracts used or to incorrect dosage. In the *Johns Hopkins Hospital Bulletin* Dr. E. Goetsch has reported an important and careful investigation of the subject. Two young bitches of the same litter were taken; one was fed daily with half a gramme of the dried extract of the anterior lobe of the pituitary gland, and the other was used as a control. After seven months the animals were killed. The ovaries of the former contained numerous corpora lutea and albicantia, while those of the control contained simply unripe Graafian follicles. An extensive series of experiments was then made with young rats. When fed with excessive doses (0·1 gramme daily) of the dried extract of both anterior and posterior lobes failure to gain weight, loss of appetite, increased peristalsis, mild enteritis, and nervous manifestations, such as muscular tremors and weakness of the hind limbs, were produced. The latter symptoms were due to the posterior lobe element, for they could be produced by administering an extract of this lobe, but not of the anterior lobe. The ovaries, tubes, and uterus of animals fed with extract of the whole gland were larger and more vascular than in controls and the ovaries reached sexual maturity from one to two months before normal. In males premature growth and development of the testes, with spermatogenesis, was produced. Feeding with anterior lobe extract resulted in increased weight and more vigorous body growth and earlier

[1] American Journal of Orthopedics, February, 1910.

genital development. The fur was harsher and thicker. Feeding with the posterior lobe did not stimulate growth or sexual development; indeed, it had a retarding influence on the latter. These results explain why in acromegaly, now believed to be due to over-activity of the anterior lobe consequent on adenomatous hyperplasia, there is in the early stage increased sexual activity and in the late stage, with pituitary involution, disappearance of the sexual function and atrophy and degeneration of the sexual glands. The view put forward by Biedl that deficiency of the secretion of the posterior lobe causes genital hypoplasia seems incorrect. This deficiency causes a tendency to the deposition of fat and increased carbohydrate tolerance, which can be favourably influenced by administration of posterior lobe extract. Cases of pituitary disease in which symptoms of sexual failure, such as amenorrhœa and impotence, have been favourably influenced by administration of pituitary extract by the mouth have been recorded by Cushing. This treatment also seems indicated in conditions of genital aplasia and adiposity and in circumstances referable to ductless glands other than the pituitary.

REFORM AND DELAY.

To find Dr. F. J. Waldo, the coroner for Southwark, as well as for the City of London, calling the attention of a jury to the insanitary phenomena observable in the "Tabard-street area," carries us back in memory many years before the war, when there was more leisure and more money for the removal of such abuses than is likely to be the case for some time to come. At the inquest referred to it was proved that a woman had died as the result of heart failure from an attack of bronchial catarrh, and there was evidence that the roof leaked, the floors were rotten, and the paper on the walls was falling off from the damp. A medical witness summed up the condition of the room, for which a rent of 6*s*. per week was paid, by saying that "it was not necessary to hold an umbrella over the bed where the deceased slept, but the rain came in everywhere else." In these circumstances death consequent upon bronchial catarrh was ascribed with literal accuracy to "Natural causes," but a rider, added to its verdict by the jury, which asked that the houses where the death took place should be condemned, was prompted, no doubt, by the feeling that such deaths may be natural but are not unavoidable. As a matter of fact the houses, we understand, had been already condemned as unfit for habitation some years ago, and they were cleared of their inhabitants, but their demolition was delayed and tenants have again been allowed to occupy them. If their condition to any general extent is such as was described at the inquest, it is to be regretted that their existence was not cut short at an earlier date. Promptitude of action is frequently a cheaper course than delay, and there must be many examples of expenditure postponed with increased cost as its result. The housing of the working classes of London was recognised as a difficult problem long before the close of the nineteenth century, and although cheaper locomotion has provided a solution to a certain extent, higher land values and more costly labour have made us wish that the fathers and grandfathers of the present generation had done more towards settling a question which was raised and shelved in their day. And, alas, when peace comes, this and similar matters of extreme social urgency may find themselves relegated still further into the background by circumstances arising out of the war and by lack of funds consequent upon it. And where pecuniary considerations are not involved time and opportunity for legislation may not be easily secured. Reform connected with the registration of deaths and with the holding of inquests has long been delayed. The report of the Royal Commission on the Poor-law has borne no such fruit as was expected to result when the Commission closed its labours. Quacks and nostrum-vendors are still carrying on a profitable trade at the expense of the public and to the detriment of the health of their clients. It is easy to say that there are matters of more instant importance than these, and that other questions will arise demanding settlement when the affairs of the nation are nearer to resuming their normal course. It may be admitted that matters of merely comparative urgency must often stand aside for others more insistent in their demand for attention. It would seem, however, that in domestic legislation and in public health administration, as in other affairs, arrears are more easily accumulated than got rid of, and that postponement when once it has taken place is liable to be repeated or prolonged. The allowing of the "Tabard-street area" to become inhabited again is a good example of dangerous procrastination.

TUBERCULOSIS IN THE NETHERLANDS.

TEN years ago the Dutch Association for the Promotion of Science set up a committee of medical men to make a statistical investigation into the pathogenesis and spread of tuberculosis in Holland. A table of 53 leading questions was drawn up, with numerous subdivisions, to illuminate the points at issue; forms containing these questions were issued to 261 medical men in Holland, who were asked to fill in a form for each of their tuberculous patients and to return it to the commission. After the lapse of much time 92 medical men sent in returns dealing with 1510 tuberculous patients. The commission has worked up these statistics, and has recently published an account of them, together with the general conclusions to which they lead.[1] Over 92 per cent. of the patients were suffering from tuberculosis of the lungs alone; only 47 patients had tuberculosis of other parts of the body alone. Almost exactly half were males. Summing up the results of their investigation, the commission remarks that nothing in the nature of certainty can attach to their conclusions, owing to the nature of the material on which they are based and the variety of the facts concerned in the acquisition of a tuberculous infection. They believe that tuberculosis most commonly appears between the ages of 14 and 40; more than half the patients take notice of the infection and seek medical advice within a year of its occurrence. The acute infections appear to play an important part in opening up the way for tuberculosis, more particularly influenza; alcoholism, grief, and anxiety seem to have no influence as predisposing causes. The small number of the patients who gave a history of recovery from tuberculosis of some part of the body in their early years indicates that a tuberculous infection is apt to produce a certain degree of immunity to the disease. Many of the patients exhibited the scrofulous diathesis

[1] Nederl. Tijdschr. v. Geneesk., Amsterdam, 1916, vol. i., pp. 601-644.

(38 per cent. of 887 cases), and many of them were members of large families. As regards childhood, tuberculosis is commoner at the beginning and end of this period of life; in the case of girls, going out into service and hard work increase the liability to tuberculosis. So far as men are concerned, occupations like those of printers and workers in wood, cork, straw, and metal, increase the liability to tuberculosis; agricultural labourers, both men and women, are comparatively rarely infected. Domestic service seems to be particularly unfavourable in the case of women. Importance is attached to the home circumstances; tuberculosis is commoner in houses that get no sunlight, and in persons who have slept two or more in one room or one bed. The actual source of infection was undiscovered in 488 of the 1510 cases investigated; in 823 (or 54·5 per cent.) the infection was acquired beneath the parental roof, and in the remaining 199 patients the source was said to be the husband or wife, fellow workers, friends, servants, boarders, persons nursed, or, in 30 cases, residence in an infected house. In 604 married tuberculous persons the spouse was certainly tuberculous in 65 instances and possibly tuberculous in 12 more. The commission states that no conclusion as to the importance of heredity in the acquisition of tuberculosis can be drawn from their figures; but they are of the opinion that it is a factor of some significance.

THE PATHOGENESIS OF ACROMEGALY.

SINCE Pierre Marie in 1886 called attention to the peculiar and interesting dystrophy which he named acromegaly, numerous cases of this striking morbid entity have been described, but although in their general aspect and evolution such cases more or less resemble each other, clinical investigation of each particular case reveals some peculiarity or detail worthy of special examination. Professor Massalongo and Dr. Piazza, in the medical section of *Il Policlinico*, February and March, 1916, publish a case which lends support to the view that acromegaly, which has its primary origin in hyperfunction of the pituitary gland, is often complicated by contemporary or successive phenomena dependent on functional or organic change in other glands with internal secretion; such complications are deserving of discussion and interpretation as to whether they should be considered invariable or exceptional, independent or accidental occurrences, or subordinate and necessary. In the case published by these observers, ocular disturbances, modification of the field of vision with marked changes shown by radiography, left no doubt as to the existence of a pituitary lesion. Other facts, however, made it impossible to exclude the presence of symptoms dependent on simultaneous changes in other endocrinous glands, especially of the thyroid and genital glands. In fact, the case might be taken as an example of a thyro-genito-pituitary syndrome to which various authors, chiefly French, have drawn attention in recent years. The implication of the other glands except the pituitary, whether it represents an independent and accidental occurrence or one subordinate and necessary, is not, however, equivalent to saying that acromegaly is a pluri-glandular syndrome. Changes in these glands do not signify their participation in the pathological process of acromegaly, but, according to these observers, are capable of an entirely different explanation, which is that the endocrinic system constitutes an organo-functional whole, whose constituent elements are physiologically in such intimate connexion that one of them cannot undergo any change without a reaction taking place in the others.

THE SUPPLY OF PETROL TO MEDICAL PRACTITIONERS.

THE President of the Board of Trade has appointed a committee, consisting of Mr. Oliver Bury (chairman), Mr. A. E. Bowen, Sir John Prescott Hewett, G.C.S.I., and Mr. P. G. L. Webb, to control the supply and distribution of petrol, and to consider what measures are necessary in the national interest—(1) To ensure that adequate supplies of petrol shall be available for the purposes of the war and for other essential needs; and (2) with the above object, to regulate the use of petrol for other purposes in the United Kingdom during the period of the war; and, subject to the direction of the Board of Trade, to give executive effect to the measures decided upon. Mr. H. W. Cole, of the Board of Trade, will act as secretary to the Committee, whose offices will be at 29, Abingdon-street, Westminster, S.W. The Committee will not consider individual applications for supplies of petrol, or deal with correspondence relating thereto; but if the medical man is to receive that adequate supply which is absolutely necessary to enable him to carry out his professional duties, it should be somebody's business to give attention to his requirements. A few days ago, in one of the daily papers, a medical practitioner complained of inability to get petrol for over a fortnight, stating that he was "responsible for medical attendance on over 2000 people engaged directly or indirectly on munition work." If such instances as these are allowed to multiply, the health of the community will speedily suffer. A form has been issued to medical men by the National Health Insurance Commission, on which they are requested to state their estimated need of petrol, but we learn that some 7000 practitioners have not yet made a return as to their requirements. We think this is regrettable. The question of the supply of petrol to the medical profession is one which will be best dealt with by an organised body, and the National Health Insurance Commission should be able to influence the Government to ensure that medical men generally shall have the first consideration, so far as private users are concerned.

STREPTOCOCCAL PUERPERAL FEVER IN THE ANGLO-EGYPTIAN SUDAN.

IN an interesting paper in a recent issue of the *Journal of Tropical Medicine and Hygiene* Dr. Albert Chalmers, director of the Wellcome Tropical Research Laboratories, Khartoum, and Dr. Salim Atiyah, medical officer in charge of the Omdurman Civil Hospital, discuss the incidence of streptococcal puerperal fever in the tropics, with special reference to the Anglo-Egyptian Sudan. The attention of these observers was called to the subject by the occurrence of several cases in Khartoum and Omdurman associated with the presence of a streptococcus in the uterine discharges. The question of childbirth among non-civilised races is considered, and it appears that there is some agreement of opinion that labour is easier among them than among those that are more civilised. The reason advanced

for this is that pregnancy in the former generally takes place at an earlier age than in the latter, and that the hard life and spare diet common in the non-civilised races keep the young women thinner, a condition which is favourable to a quick and easy labour. Some experts also assert that the head of the child in the uncivilised races is smaller than in the civilised, and that on an average the child of the uncivilised woman weighs at birth about a pound less than that of a civilised mother. Childbirth in these circumstances is often a simple physiological process among savage races, and therefore less likely to be complicated by puerperal infection. According to Dr. Chalmers and Dr. Atiyah, among the semi-civilised Arabs and Sudanese of Kordofan and other parts of the Sudan every young girl on attaining the age of 5 or 6 years undergoes one or other of the two forms of so-called circumcision, the milder operation consisting of the removal of the clitoris and labia minora, while the more severe, or "Old Egyptian circumcision," entails some additional cruelty in the removal of the upper two-thirds of the labia majora. The result of these operations is the formation of scar tissue and contraction of the orifice of the vagina, necessitating enlargement by means of a razor at the time of marriage, and again at the birth of a child, otherwise it would be difficult for the head to emerge from the outlet at the moment of delivery. The enlarged orifice is again closed partially after the child is born, and consequently incision with the razor is required at each succeeding labour. These wounds naturally offer opportunities for septic infection, and streptococci and other organisms have been found in the vaginal discharges. After reviewing the literature of the subject, the writers refer to the various forms of the genus streptococcus, and call attention to two closely allied streptococci—S. salivarius and S. bovis—both of which are known to occur in human saliva and in cow-dung, S. bovis being also found in human fæces. Cow-dung, it appears, is used as a remedy for various ailments in the Sudan, sometimes in the form of a poultice applied to the painful part of the body, including the external genitals of pregnant women. Moreover, a cow-dung wash is used on the floor and walls of rooms to keep away biting insects, and in Khartoum and Omdurman cow-dung is employed as a wash for the top of ovens and also for the walls of outhouses where grain is stored. When this wash dries it forms dust, which may be wafted about, the streptococci contained in it being known to be resistant to the effects of desiccation. It is possible therefore for this streptococcal dust to contaminate the hands of attendants upon parturient women and thus lead to their infection. Dr. Chalmers and Dr. Atiyah state that they suspect that the vagina and later the uterus become infected by bovine fæcal streptococci, conveyed either through the agency of the patient's own fæces to her genitals, or by dust on the hands of the attendants or on the instruments which may be employed. In their opinion the real protection against this form of infection is the use of antiseptic vaginal douches before and after delivery, associated with antiseptic intra-uterine irrigation in cases in which it has been necessary to introduce the hand or an instrument into the uterine cavity. Every antiseptic precaution must, they say, be more forcibly insisted upon in the tropics than in more temperate climates.

THE FRENCH TREATMENT OF THE DISCHARGED SOLDIER.

(FROM A SPECIAL CORRESPONDENT.)

THE Government and the people of France are now grappling with a problem which they recognise is only second in its effect on the destinies of the nation to the success of their military operations. After 18 months of war they have to make arrangements for the return to civil life of several tens of thousands of soldiers no longer capable of bearing arms nor, in most cases, of continuing their pre-war occupations. Before peace is declared this number will be augmented and they will then have to cope in addition with the competition of the able men who have also lost their means of livelihood for some cause connected with the war. The same problem in different dimensions will have to be faced in all the allied countries, but the others will have the advantage of being able to note by the success or failure of the different steps taken in France what to imitate and what to avoid.

Development and Organisation of the Movement.

As it has so often happened in her industrial history France was the originator of the idea of educating the infirm in which she afterwards saw herself surpassed by other countries. I am indebted to the excellent report made by Dr. Borne on "La Rééducation et la Réadaptation au Travail des Blessés et des Mutilés de la Guerre" for the information that the famous Paris hospital of Salpétrière was originally an asylum where the disabled were taught to work, founded in 1657 by M. Pomponne de Belièvre, the then Président au Parlement. In the last century several schools for educating the infirm were founded, the most noteworthy being the Marsoulan asylum workshops for both sexes, of which there are four branches in Paris, and the establishment of the Frères de St. Jean de Dieu, which discharges 40 young men each year perfectly able to earn their own living in spite of their infirmity. With such meagre resources it was, of course, impossible to meet the needs of a sudden influx of thousands of disabled soldiers. The danger to the State of a large percentage of unoccupied men was quickly realised, but at first the means taken to remedy matters were more or less chaotic. The presence in the streets of the convalescent soldiers who had lost their limbs aroused the compassion of the public and a great many enterprises were started by private subscription to provide these men with a means of gaining their living. At the present time there are over 50 such organisations in Paris alone, and this only represents a tithe of what is being done, as similar ones are scattered all over France. The absence of any central bureau, where the aims of the different *œuvres* could be tabulated and any overlapping checked, resulted in a certain lack of cohesion and a proportionate waste of energy. The same difficulty was found in the Government where the control of the destinies of disabled soldiers was broken up between the Ministries of War, the Interior, and Labour, with a resulting indescribable confusion. On March 3rd a paragraph appeared in the French press stating that an "Office National des Mutilés et Réformés de la Guerre" would be formed by a combination of these three ministries to deal with every possible provision to be made for the discharged soldier. The Government idea is to gather up all the threads of public and private concerns into its own hands and so achieve more widespread efficiency through centralised effort. The philanthropic idea is that while private endeavour may lack cohesion it undoubtedly possesses more elasticity and variety of form than the state-moulded machine, and is more likely to meet individual requirements than any rigid institution. At the moment both methods are supplementing each other fairly successfully, but the private benevolence that may actually be preferable when dealing individually with restricted numbers is bound to be superseded by the centralised methods which must be adopted by the State when it has to deal with large numbers. The ideal organisation is a central administrative body which will coördinate and control the actions of the executive and provincial bodies to which the actual carrying out of measures designed for securing the proper return of disabled men to civilian life will be entrusted.

Encouragement of the Disabled to do their Best.

One of the difficulties met with at first by both public and private organisation was the lack of enthusiasm, not to say marked disinclination, shown by the majority of the disabled soldiers for learning any trade that will help them to gain a living. I am told by Dr. Bourrillon, the director of the Institut National Professionnel des Invalides de la Guerre de Saint Maurice (Seine), that out of 2000 men he only found 350 who were willing to learn a trade and become self-supporting. The apparently curious attitude is quite easily explained. It must first be remembered that the mental and moral condition of men who have suffered the amputation of one if not two limbs after the strain of a severe campaign is almost always below the normal. When the time came for them to make their choice they were not able to throw off the lassitude of invalidism. This physical and mental inertia left them an easy prey to those discontented spirits who taught the fallacious doctrine that they need not work as they had been wounded in the service of the State, and therefore the State owed them a living; or the equally ill-founded argument that if they gain money by their own efforts they lose their right to a pension. The convalescent homes where the soldiers were often obliged by their wounds to spend long weeks without much occupation were regular forcing-houses for these mischievous ideas, and so were the cabarets where the weekly half-holidays were spent, where the wounded hero was treated to more sophistries as well as more wine than he was capable of withstanding. One of the best antidotes for any misconception of the road where lie his true interests was found to be in a visit to the soldier's home. Once he is back in the familiar surroundings of work the attitude of his women-kind teaches more than any phrases. It is not in the thrifty Gallic temperament to countenance an idler, and it gradually dawns on the hero's astonished mind that if he wants to be the head of his family and not merely a chimney-corner dependent he must be a producer and not an idler. When he was separated from the mischievous counsels of the few discontented spirits who often succeeded in demoralising several hundred men in a hospital, he felt the influence of home atmosphere, and the effect was always noticeable.

This state of things has now greatly changed. The public have had time to think and realise what are the best conditions for which to aim. The help of the doctors and nurses and visitors in the hospitals has been enlisted with splendid results. It was accomplished by means of talking to the disabled and encouraging them about their future, and by the use of cinema pictures showing the *mutilés* at work in their workshops, and post-card illustrations of the different establishments for re-education, as well as by the gentle coercion of the pretty little minor *métiers* of basket weaving, &c., which keep alive the habit of work during the long days of convalescence, besides contributing to the functional re-education. Thus it was impressed on the convalescent that his pension will be quite independent of what he may earn, but will not keep him in idleness, since it is only given to redress whatever disability the pensioner suffers from. He is taught that the duty of a French citizen is not bounded by the defence of the State, but that after he has been wounded in her services his help is still needed in the rebuilding of her commerce. The men are told that the lack of manual labour in France before the war will be accentuated not only by the number of killed but by the lowered birth-rate, and that even the modicum of work the disabled can do makes them a valued asset to the State. Perhaps this point of view was never better expressed than by one of the *mutilés*, who replied to a speech of M. Maurice Barrès at the school in the Quai de la Rapée. "Nous avons fait comme tout Français notre devoir de soldat, mais il nous reste encore un à accomplir, c'est celui de travailler à la grandeur économique de notre chère France."

Choice of Trade.

When the convalescent has made up his mind to work he has to be guided in the choice of a trade. In this choice the three things that influence the doctor's and instructor's advice are: (*a*) that it should be something he takes pleasure in doing; (*b*) that he is capable, physically, of doing it; (*c*) that it should resemble as much as possible the *métier* he followed before the war. The number of trades it is possible for a man who has lost one or more limbs to learn is surprisingly great. At the Belgian school founded at Port Villez, near Vernon, 42 trades are taught, even though the 1200 inmates constitute what is really more a workshop for the production of government supplies for the Belgian army than a school of education for *grands blessés*, of whom there are only 360. The adviser keeps in mind that the primary object is to prevent the man from becoming a public charge, the secondary one being to turn him into an economic asset to the State, so the choice of a new occupation is made with a view to educating his brain to obviate the disadvantage of his infirmity. For example, a man who was formerly a carpenter and whose loss of a leg prevents him from moving quickly is encouraged to study design and the calculation of how much material is needed to build a house, &c., so that he may become a small contractor. Special attention is paid to the fact that after the war there will probably be a great increase in the use of motor agricultural machines to make up for the lack of labour, and a considerable number of *mutilés* are to be taught how to run and repair these machines. Great emphasis is being laid on the necessity for the education to begin as soon as possible. A committee of teachers has been formed to go about the hospitals and encourage pupils to learn bookkeeping, stenography, and typewriting. One notable instance of the success of this scheme occurred at the hospital now run under the auspices of the Scottish Red Cross in the old hotel of Pauline Borghèse in the rue de la Chaise. Here I am informed that a man who had previously been a country labourer was able in two months to pass his examination in bookkeeping, and as soon as he was able to leave the hospital a situation was found for him. Bookkeeping is one of the most favourite employments, and cobbling or bootmaking runs it a close second. The director of one school for the disabled told me that if the men had their way France would be over-run with bookkeepers and cobblers.

Artificial Appliances.

When the trade is chosen and the recovery efficiently complete the functional re-education is begun at once. The men who have lost one arm practise using the other, and as soon as the stump of an amputated limb is in condition the artificial appliance is tried. In the early months of the war there was a deficit in wooden arms and legs, till the Government were obliged to requisition the manufacturers' output and open new workshops, besides ordering considerable quantities in the United States. A number of orthopædic centres were organised in France and her colonies, one for every military region. To these centres amputated men are sent and details of their case noted. When the stump is ready for the artificial limb and the functional education is complete the men are despatched to the centre of professional re-education. Later on a special Commission d'Orthopédie de France was formed to take steps to ensure that the artificial limbs furnished should be of good design, low priced, and of good quality. The limbs will be kept in repair at the Government expense. It is notable that there are far more amputations of legs than of arms, the reason being that the man whose arm is injured is usually able to walk to the nearest dressing-station, while the man wounded in the leg has to wait till help reaches him. The chief Government factories are now at St. Maurice, Montpellier, Lyons, and Bordeaux, and as far as possible the work is done by soldiers who have had their own limbs amputated.

There has been much discussion as to the best type of artificial appliance, and some elaborate inventions have been put on the market. One of the latest and most ingenious has just been evolved by Professor Amar, the Director of the Conservatoire des Arts et Métiers laboratory of military prosthesis. It consists of two models of artificial arms. The first is intended for manual labour and has a steel forearm ending in a kind of crab-like claw. It is very solidly made and can open and shut. The second is meant for lighter and more ornamental purposes. It has a jointed hand and fingers which can be moved without effort by means of an arrangement of steel straps round the chest and shoulders. When the models were shown to the Académie des Sciences a wounded soldier sawed some wood with the No. 1 model, and a violinist who had lost his right arm succeeded in playing his instrument with the model No. 2. While the men are at first keen to possess one of these fancy appliances I am told that in many instances after a few weeks' trial they come back and ask for the humbler but more comfortable peg-leg or hook-arm. In the report on the Lyons School for the Disabled, founded by Senator Herriot, Dr. Carle states that an unexpected visit paid to the

workshops often showed the men working away with what was left of their limbs with surprising agility, the artificial arm being carefully laid aside. The preference for using what they have may be useful later on when the artificial limb gets out of repair, but the doctor does not encourage it. The temporary use of the peg-leg or hook is advised where the stump is not yet in condition to support a permanent artificial appliance. The State owes an artificial limb to every man who has lost a limb in her service, and he can have it at any time he asks for it. A special commission has been formed to provide every soldier not intending to try manual labour with a limb that will disguise his loss as much as possible, and for the labourer a solid wooden arm or leg that he will find practical for his work.

Arrangements for Education of the Men.

Once his *métier* is chosen and his defect remedied as far as possible, the professional education begins. The Government will give to the discharged and disabled soldiers as far as possible all the positions as caretaker, keepers of musées, concierges, special messengers, and employees in Government offices. For these employments little or no training is necessary, but since there are a number of illiterate men among the disabled, classes have been arranged to teach them to read and write. I have seen bearded men wearing the *croix de guerre* trying to master the difficulties of reading with the same dogged courage that won their decoration, and their teachers say they learn with surprising speed. It is a much-disputed question whether the professional school run on institution lines, with special instructors and classes for teaching the different trades and accommodation for housing them, gives better results than the apprenticeship system, where the man receives a lodging allowance and learns his trade in the workshop of an employer. The argument for the former plan is that the men are better looked after and not so exposed to the temptations to which their lowered vitality renders them more than usually liable, while the instruction, being specially adapted to their needs and given by trained teachers, is more likely to have speedy results than that of the foreman in a workshop, who may be an excellent artisan but unable to impart his knowledge. It is generally acknowledged that any attempt to introduce disabled soldiers into the existing houses for the education of infirm civilians would be disastrous owing to the general lack of ambition that is a marked characteristic of the inmates of these institutions.

It is difficult to form an exact idea of the arrangements made for the discharged soldier owing to the lack of uniformity in the great number of charitable undertakings, each run on their own methods. In Paris alone there are nearly 70 organisations run by voluntary contributions, some of them only started since the war and more or less ephemeral, others already existing, with their facilities for housing, education, &c., enlarged to make room for discharged soldiers. In Paris and the provinces there are already some 62 schools for professional re-education and 10 agricultural schools, containing in all about 3755 places for men who wish to be independent and earn their own living. Three of these schools are run by the Government, 8 by the departments, 7 by the city, 4 by Chambers of Commerce, and the rest by private initiative. While they differ widely in details of internal management—cost of up-keep, allowance made to the men, and similar circumstances—they exist primarily for the same object—i.e., to help each soldier by fitting him with the proper appliance, teaching him a trade, finding him a position, and lending him money for a new outfit, to become a contented citizen who feels that he has yet a rôle to play in the forward progress of his country. The magnitude of the task will be realised when it is remembered that, roughly speaking, about a million men are now entitled to pensions, and France may be congratulated on the fact that she has known how to choose wisely the men who are engaged in framing the regulations that will govern the well-being of the return of the discharged soldier to civil life.

THE annual general meeting of the London and Counties Medical Protection Society, Limited, will be held at the offices of the society, 32, Craven-street, Strand, London, W.C., on Wednesday next, May 3rd, at 4 P.M., to receive and adopt the annual report and balance-sheet; to elect president, vice-presidents, officers, and auditors, to fill vacancies on the council, and to transact other business.

WESTERN CANADA.

(FROM OUR OWN CORRESPONDENT.)

Health Report of British Columbia for 1915.

THE health report of British Columbia for 1915 states that the population of the province is estimated to have shrunk from 427,000 to 327,000 owing to the war. The infantile mortality, 79·5 per 1000 births, is very creditable to the province, but 18 per cent. of births registered should have been reported in the preceding year—a delay probably due to the great distances in this spacious province. The chief medical anxieties are typhoid fever and tuberculosis, schemes for dealing with which are foreshadowed. The report is presented by a sanitary inspector, who prepared it under the supervision of Dr. H. E. Young, then provincial secretary. Since his recent retirement there is no medical man in the department. This is said to be for economy, but an epidemic of 350 cases of small-pox is reported, while the death-rate is some 25 per cent. higher than in the previous year.

Economy and Public Health.

Economy is the order of the day in British Columbia, as elsewhere, and, as usual, it was the Health Department's estimate which the Vancouver council desired to prune. But Alderman McIntosh, the chairman, gave some sound advice. The health of the city was, he said, just a matter of dollars and cents. The estimate was for £7000, but if the city could afford £20,000 the death-rate would be reduced and they would have fewer babies dying. As each life was calculated to be worth some £900 to the State, the loss by unnecessary deaths was easily seen. It looked like an economy to cut off the rat-catching bonus, but one case of bubonic plague in Vancouver would very quickly damage the city. This speech impressed the council, and they took 1·6 per cent. only off the estimates, a tribute to the clear thinking and eloquent exposition of the alderman, who doubtless was not without advice from the capable medical health officer of Vancouver, Mr. F. T. Underhill. It is all the pleasanter to find so sound views on hygiene expressed in the largest city of British Columbia, when we remember that the Government of the province thinks so lightly of health that it has done without a provincial health officer for two years. But there is reason to hope that that policy will be shortly reversed. A general election is pending, two Cabinet Ministers have recently been rejected at polls in Vancouver and Victoria by huge majorities, and the Liberal Opposition leaders have promised to local physicians that if elected they will pay particular attention to the hygiene of the province. Of what use is it to the province to spend money on immigration and attracting new settlers if when they come they are attacked by typhoid fever and tuberculosis, as stated in the health report for 1915. Then further immigration of people unacquainted with the province has to be secured to fill their places, a continuing and useless expense to the province, and a damage to the British Empire.

The Tranquille Sanatorium at Kamloops.

The annual report of the King Edward Sanatorium for cases of tuberculosis has just been issued. This is the provincial sanatorium of British Columbia, situated at Tranquille, Kamloops, in the dry belt between the Cascades and the Selkirk Mountains. There were 94 patients generally under care; the cost was reduced this year to 1½ dollars; 16 per cent. were incipient cases, 25 per cent. moderately, and 58 per cent. far advanced. Only 1 per cent. proved non-tuberculous, a credit to the diagnostic acumen of the physicians of the province. But as Dr. C. H. Vrooman, the superintendent, remarks, the sanatorium is provided to care for incipient cases. It is they who get from it the greatest benefit, and until it has not the present number of beds but at least 400 (one for each annual death from tuberculosis in the province) it can do but little materially to reduce the death-rate from this preventable disease.

Prisoners of War in Germany.

The subject of the treatment of prisoners of war in Germany has aroused much interest in Canada. Dr. Bert W. Caldwell, American Red Cross, officially sent to inspect prison camps in Germany in November, 1915, states that at first there were difficulties, and one of the camp commandants was inhumane, but now in Germany the prisoners are well treated. When captured the men are detained till

free of vermin and sent to isolation barracks for a fortnight; they are washed and disinfected every fourth day, and when thoroughly clean are admitted to a prison camp of large sheds arranged on either side of camp streets. Separate nationalities are lodged together, for the English want much fresh air, French prisoners less, and Russians none at all. There have been epidemics of typhus, but there is none now, while more than half the deaths are due to tuberculosis. Insanity is very rare. The food, though good, appears insufficient; stew or soup is given to avoid the use of knives and forks. It is on their kitchen the commandants chiefly pride themselves, and next on their laundries and bath-houses. Individual prisoners are considered. Two orthodox Jews amongst some Russians were becoming emaciated, and it was found that their religion prevented them from eating the food provided, so they were given spirit lamps to prepare their own food. Farms are a part of the camp equipment, and here many prisoners are employed; some work in neighbouring mines or factories. Sanitation is carefully watched and fires prevented. Playgrounds, schools, and means of amusement are always provided.

Victoria, B.C., April 12th.

NOTES FROM INDIA.

(FROM OUR OWN CORRESPONDENTS.)

Women's Medical College at Delhi.

His Excellency the Viceroy on Feb. 17th opened, in the presence of a large and distinguished gathering, the Lady Hardinge Medical College and Hospital for Women in the area of the new city of the Imperial capital. The Hon. Surgeon-General Sir Pardey Lukis, K.C.S.I., K.H.S., V.D., Director-General of the Indian Medical Service, chairman of the Hospital Committee, in an opening speech gave the history of the hospital and enumerated the list of Ruling Princes and others who had so generously supported it. In 1912 Her Excellency the late Lady Hardinge was impressed by the fact that no medical college existed in India exclusively for women, and that consequently the higher medical education of women was conducted by male professors in mixed classes at men's colleges. Accordingly, it was proposed to establish at Delhi a college for 100 students with its attached hospital of 150 beds, in which women would be taught by women to attend on women, and a separate institution as a training school for nurses. Owing to the generous help forthcoming it was possible for Her Excellency to lay the foundation-stone of the new Medical College on March 17th, 1914, a few days before her departure for England, from which country, alas, she never returned. Further subscriptions and endowments are, however, urgently required for this college, which Her Excellency regarded as a pioneer institution ultimately leading to the wide diffusion of medical and sanitary knowledge by training Indian women of the proper class as doctors, health officers, and nurses. The college buildings and hostels are now complete, whilst the out-patient department and one of the hospital blocks are far advanced. No difficulty is anticipated, therefore, as regards the commencement of tutorial work in September next, affiliation to the Punjab University having been sanctioned.

The United Provinces Medical Budget.

Speaking on the Medical Budget at Lucknow, Colonel C. McTaggart, I.M.S., said plague had declined to the minimum. The dispensaries did good work during the cholera epidemic last year, the peculiar feature of which was that it persisted into the winter. Blood examinations had shown that Lucknow was remarkably free from malaria. Colonel McTaggart also alluded to the good work done in tuberculosis by Major C. A. Sprawson, I.M.S., and wished wealthy Indians would endow another hospital in the city and district.

The Bombay Bacteriological Laboratory.

The last report of Major Glen Liston, I.M.S., on the work of the Bombay Bacteriological Laboratory contains exact statistics on the effect of anti-plague inoculation in the Dharwar district. In preparing the statistics, only those houses were taken into account in which inoculated persons were living besides uninoculated and in which plague cases occurred at some date subsequent to the last inoculation; every relevant fact being carefully weighed. It appears that the uninoculated were attacked three times more frequently than the inoculated, and that the latter had nearly ten times fewer deaths. The report testifies to the importance of the work done at the laboratory under Major Glen Liston's direction, not only as to plague and the making of all the anti-plague vaccine used in India, but also as regards preventive medicine and pathological diagnosis for the Bombay Presidency.

The Lady Minto Nursing Association.

The annual report of the Lady Minto Indian Nursing Association for last year shows that the subscribers decreased and the nursing staff was depleted. But despite these difficulties the work of the association appears to have been carried out without interruption, while new responsibilities were undertaken. For instance, considerable assistance was lent to Queen Alexandra's Military Nursing Service. Another excellent piece of work undertaken by the association was the reopening of the Lady Roberts Home at Murree. Special arrangements were made by which Territorial regiments were enabled to participate in the benefits of the association.

Tuberculosis in India.

Dr. Arthur Lankester was entrusted some time ago by the Indian Research Fund with the important task of investigating throughout India, including Burma, the cause and prevalence of tuberculosis in its various forms. In a recent lecture at Rangoon College Dr. Lankester said that in India its annual victims equal the population of Calcutta. In Calcutta itself it causes a rapidly increasing mortality. It is, indeed, the great commercial and educational cities, as well as the big pilgrim centres, particularly of Northern India, which are the foci of the disease in this country. He attributes the fact to a group of causes, some climatic, but far more depending on social customs. The Indian houses, with thick walls and roofs, with little or no space for the ingress or egress of fresh air, are perfect incubating chambers for the phthisis microbe. The disease thrives chiefly, however, because social customs—prominent among them the purdah system—encourage its spread in the family. By far the greatest prevalence of consumption is among middle-class women in the zenanas, irrespective of race or religion. In a crowded Mahomedan ward in Calcutta the deaths from consumption among women last year were six times as numerous as among the ordinary population. In Peshawar the Hindu women, who live in seclusion, suffer quite as much as the Moslem women. The prevalence of the disease under these conditions is due to the fact that girls who, during childhood, have been accustomed to freedom in the open air suddenly find themselves, at a period when their physical resources are subjected to great strain, restricted to the confines often of a single ill-ventilated apartment in which they are compelled to spend the bulk of their existence. The effects of the joint family system superimpose on the purdah system a tendency to overcrowding that places all the members of a middle-class family within reach of infection. Closed-up offices and ill-ventilated schools have the same effect on the male population. Improvement depends on a spread of the knowledge of sound hygienic and sanitary principles, especially among the female population, and this is difficult to attain.

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

To be temporary Surgeons:—E. A. Fiddian and R. P. Langford-Jones.

ROYAL ARMY MEDICAL CORPS.

Temporary Captain J. C. Webb to be temporary Major.

T. M. Burn-Murdoch to be temporary Honorary Major whilst employed at the Smithston War Hospital, Greenock.

The following are granted temporary rank whilst commanding Field Ambulances: Majors to be Lieutenant-Colonels: T. E. Fielding, D.S.O., H. St. M. Carter, D.S.O., C. H. Turner, D.S.O., G. E. Ferguson, and F. E. Roberts, D.S.O.

Captain J. W. Lane to be temporary Major whilst commanding a Field Ambulance. Captains to be Majors: H. St. M. Carter, D.S.O., F. E. Roberts, D.S.O., G. E. Ferguson, A. R. Wright, E. C. Phelan, T. D. H. Robinson, A. S. Littlejohns, A. S. Williams, and V. C. Honeybourne.

W. L. Griffiths (late Captain, R.A.M.C., T.F.) to be Captain.

C. C. Coghlan is granted temporary honorary rank of Lieutenant whilst serving with the Australian Volunteer Hospital.

Captain D. J. McLaren, from Somersetshire Light Infantry (T.F.), to be temporary Captain. Temporary Lieutenants to be temporary Captains:—H. W. B. Danaher, H. A. Beaver, H. F. Blood, A. Bloom, J. D. MacEwen, J. V. Buchanan, E. C. Williams, G. R. Lawless, J. C. Lorraine, A. J. Smith, W. A. Kennedy, C. C. Weeks, and D. L. Tate.

M. K. Robertson to be temporary honorary Lieutenant. Temporary Lieutenants who relinquish their commissions:—W. H. Croly, C. S. Palmer, J. T. Anderson, E. T. Pinhey, C. Mathews, J. B. Dawson, B. D. Crichton, J. McG. H. Reid, J. L. Davies, V. C. Pennell, A. E. Gravelle, C. P. M. Joubert, and E. H. Drinkwater.

TERRITORIAL FORCE.

Army Medical Services.

Major (temporary Lieutenant-Colonel) E. J. R. Evatt, Welsh Field Ambulance, to be Assistant Director, Medical Services, Welsh Division.

Captain J. F. Edmiston, from Attached to Units other than Medical Units, to be Deputy Assistant Director, Medical Services, West Lancashire Division.

Royal Army Medical Corps.

Wessex Casualty Clearing Station: Captain A. Greene, from East Anglian Field Ambulance, to be Captain. Lieutenant J. Fenton to be Captain.

London Sanitary Company: Captain H. Beeney relinquishes his commission on account of ill-health.

West Lancashire Field Ambulance: Captain J. E. W. MacFall, from T.F. Reserve, to be Captain. Captain J.E. W. MacFall to be temporary Major. Captain F. W. K. Tough to be temporary Major whilst in command of a Field Ambulance.

London Field Ambulance: To be Captains: Lieutenant (temporary Captain) R. Carswell and W. M. Langdon.

Southern General Hospital: Lieutenant D. R. Dow relinquishes his commission on account of ill-health.

Northern General Hospital: Captains to be Majors: O. H. Chapman, G. A. C. Shipman, and B. McFarland. Lieutenant J. Pearson to be Captain.

East Lancashire Field Ambulance: R. J. Chapman to be Lieutenant.

Highland Field Ambulance: Lieutenant J. B. Foubister to be Captain.

South Midland Mounted Brigade Field Ambulance: O. Cook to be Lieutenant.

South Wales Mounted Brigade Field Ambulance: S. Child to be Lieutenant.

Lowland Field Ambulance: Lieutenant R. Armstrong to be Captain.

East Lancashire Division, Sanitary Section: Lieutenant N. S. Golding, from London Sanitary Company, to be Lieutenant.

Highland Casualty Clearing Station: To be Lieutenants: W. Alexander and A. A. McKenzie.

Attached to Units other than Medical Units.—Major W. F. Roe to be temporary Lieutenant-Colonel whilst in command of a Field Ambulance. Major J. E. B. Wells, from London Field Ambulance, to be Major. Lieutenants to be Captains: M. B. Dawson, D. L. Wall, D. G. Dingwall, and F. F. C. Jagger. W. Taylor to be Lieutenant.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

In the 96 English and Welsh towns with populations exceeding 50,000 persons at the last Census 7947 births and 5766 deaths were registered during the week ended Saturday, April 15th. The annual rate of mortality in these towns, which had been 17·2, 17·7, and 17·7 per 1000 of their aggregate civil population in 1915 (7,312,295 persons), fell to 17·4 per 1000 in the week under notice. The death-rate in the several towns ranged from 6·8 in Southend-on-Sea, 8·5 in Oxford, 8·7 in Ealing, 9·0 in Ilford, and 9·4 in Smethwick, to 22·7 in Middlesbrough, 23·1 in Warrington, 23·9 in Sunderland, 26·7 in West Bromwich, and 29·6 in Tynemouth.

The 5766 deaths from all causes were 102 below the number in the previous week, and included 452 which were referred to the principal epidemic diseases, against 420 and 381 in the two preceding weeks. Of these 452 deaths, 182 resulted from whooping cough, 120 from measles, 65 from diphtheria, 57 from infantile diarrhœal diseases, 16 from scarlet fever, and 12 from enteric fever, but not one from small-pox. The annual death-rate from these diseases was equal to 1·4, or 0·3 per 1000 above that recorded in the previous week. The deaths attributed to whooping-cough, which had increased from 85 to 141 in the five preceding weeks, further rose to 182, and caused the highest annual death-rates of 1·7 in Birmingham and in Darlington, 2·1 in West Ham, and 2·9 in Cambridge. The deaths referred to measles, which had been 115, 122, and 121 in the three preceding weeks, numbered 120; the highest rates from this cause were 1·7 in Salford, 1·9 in Swansea, 3·6 in Grimsby, and 4·0 in Rochdale. The fatal cases of diphtheria, which had been 53, 71, and 45 in the three preceding weeks, rose to 65, and included 13 in London, 8 in Liverpool, 5 in Stoke-on-Trent, 4 each in Leeds and Middlesbrough, and 3 in St. Helens. The deaths of infants (under 2 years) from diarrhœa and enteritis, which had been 65, 66, and 50 in the three preceding weeks, rose to 57, of which 16 were recorded in London, 4 in Manchester, and 3 each in Birmingham and Salford. The deaths attributed to scarlet fever, which had been 12, 20, and 15 in the three preceding weeks, numbered 16, and included 3 in London. The fatal cases of enteric fever, which had been 9, 7, and 8 in the three preceding weeks, rose to 12, and included 2 each in Wigan and Bradford.

The number of scarlet fever patients under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, which had been 1783, 1768, and 1778 at the end of the three preceding weeks, fell to 1717 on Saturday, April 15th; 163 new cases were admitted during the week, against 210, 214, and 252 in the three preceding weeks. These hospitals also contained on the aforementioned date 1392 cases of diphtheria, 249 of whooping-cough, 142 of measles, and 40 of enteric fever, but not one of small-pox. The 1433 deaths from all causes in London were 49 below the number in the previous week, and corresponded to an annual death-rate of 17·3 per 1000. The deaths referred to diseases of the respiratory system, which had declined from 405 to 326 in the four preceding weeks, further fell to 323 in the week under notice.

Of the 5766 deaths from all causes in the 96 towns, 190 resulted from violence, 406 were the subject of coroners' inquests, and 1711 occurred in public institutions. The causes of 47, or 0·8 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest. All the causes of death were duly certified in London and in its 14 suburban districts, in Sheffield, Leeds, Bristol, Bradford, and in 61 other smaller towns. Of the 47 uncertified causes, 16 were registered in Birmingham, 8 in Liverpool, 4 in South Shields, 3 in West Bromwich, and 2 each in St. Helens, Manchester, Stockton-on-Tees, and Tynemouth.

HEALTH OF SCOTCH TOWNS.

In the 16 largest Scotch towns with an aggregate population estimated at 2,372,000 persons at the middle of this year, 1090 births and 933 deaths were registered during the week ended Saturday, April 8th. The annual rate of mortality in these towns, which had been 20·7, 19·9, and 19·6 per 1000 in the three preceding weeks, rose to 20·5 per 1000 in the week under notice. Among the several towns the death-rate ranged from 14·1 in Greenock, 14·9 in Clydebank, and 16·1 in Motherwell, to 21·9 in Edinburgh, 22·4 in Kilmarnock, and 23·3 in Ayr.

The 933 deaths from all causes exceeded the number in the previous week by 43, and included 77 which were referred to the principal epidemic diseases, against 82 and 96 in the two preceding weeks. Of these 77 deaths, 36 resulted from measles, 14 from scarlet fever, 10 from whooping-cough, 8 each from diphtheria and infantile diarrhœal diseases, and 1 from enteric fever, but not one from small-pox. The death-rate from these diseases was equal to 1·7, against 1·1 per 1000 in the large English towns. The deaths attributed to measles, which had increased from 23 to 52 in the five preceding weeks, fell to 36, and included 21 in Glasgow, 6 in Kilmarnock, and 2 each in Edinburgh, Paisley, and Coatbridge. The deaths referred to scarlet fever, which had been 12, 8, and 7 in the three preceding weeks, rose to 14, of which 8 were registered in Glasgow. The fatal cases of whooping-cough, which had been 8, 3, and 8 in the three preceding weeks, rose to 10, and comprised 5 in Glasgow, 2 each in Aberdeen and Kirkcaldy, and 1 in Paisley. The deaths attributed to diphtheria, which had been 16, 15, and 8 in the three preceding weeks, were again 8 in the week under notice, and included 2 each in Edinburgh, Aberdeen, and Ayr. The deaths of infants (under 2 years) from diarrhœa and enteritis, which had increased from 8 to 18 in the four preceding weeks, fell to 8, of which 6 were recorded in Glasgow. The fatal case of enteric fever occurred in Falkirk.

The deaths referred to diseases of the respiratory system, which had been 195, 212, and 189 in the three preceding weeks, rose to 193 in the week under notice, and were 11 above the number registered in the corresponding week of last year. The deaths from violence numbered 39, against 29 and 24 in the two preceding weeks.

In the 16 largest Scotch towns 1249 births and 801 deaths were registered during the week ended Saturday, April 15th. The annual rate of mortality in these towns, which had been 19·9, 19·6 and 20·5 per 1000 in the three preceding weeks,

fell to 17·6 per 1000 in the week under notice. Among the several towns the death-rate ranged from 10·0 in Perth, 10·3 in Clydebank, and 12·4 in Motherwell, to 22·2 in Edinburgh, 22·4 in Paisley, and 22·8 in Greenock.

The 801 deaths from all causes were 132 below the number in the previous week, and included 75 which were referred to the principal epidemic diseases, against 96 and 77 in the two preceding weeks. Of these 75 deaths, 42 resulted from measles, 13 from infantile diarrhœal diseases, 8 each from scarlet fever and diphtheria, and 4 from whooping-cough, but not one from enteric fever or from small-pox. The annual death-rate from these diseases was equal to 1·6, or 0·2 per 1000 in excess of that recorded in the large English towns. The deaths attributed to measles, which had been 43, 52, and 36 in the three preceding weeks, rose to 42, and included 27 in Glasgow, 4 in Coatbridge, and 3 each in Edinburgh and Paisley. The deaths of infants (under 2 years) referred to diarrhœa and enteritis, which had been 12, 18, and 8 in the three preceding weeks, rose to 13, of which 6 were registered in Glasgow and 2 in Hamilton. The fatal cases of scarlet fever, which had been 8, 7, and 14 in the three preceding weeks, fell to 8, and included 4 in Glasgow and 2 in Paisley. The deaths attributed to diphtheria, which had been 15, 8, and 8 in the three preceding weeks, again numbered 8 in the week under review; 3 deaths occurred in Dundee and 2 in Edinburgh. The fatal cases of whooping-cough, which had been 3, 8, and 10 in the three preceding weeks, fell to 4, all of which were recorded in Glasgow.

The deaths referred to diseases of the respiratory system, which had been 212, 189, and 193 in the three preceding weeks, fell to 167 in the week under notice, and were 11 below the number registered in the corresponding week of last year. The deaths from violence numbered 23, against 24 and 39 in the two preceding weeks.

HEALTH OF IRISH TOWNS.

In the 19 town districts of Ireland with populations exceeding 10,000 persons at the last Census, 552 births and 469 deaths were registered during the week ended Saturday, April 15th. The annual rate of mortality in these towns, which had been 24·3, 26·0, and 21·5 per 1000 in the three preceding weeks, fell in the week under notice to 21·3 per 1000 of their aggregate population, estimated at 1,148,468 persons at the middle of last year. The death-rate was equal to 23·6 in Dublin (against 17·3 in London and 17·7 in Glasgow), 19·7 in Belfast, 21·8 in Cork, 22·8 in Londonderry, 16·2 in Limerick, and 13·3 in Waterford, while in the 13 smaller towns the mean rate was 21·5 per 1000.

The 469 deaths from all causes were 5 fewer than the number in the previous week, and included 33 which were referred to the principal epidemic diseases, against 47 and 41 in the two preceding weeks. Of these 33 deaths, 16 resulted from measles, 9 from whooping-cough, 5 from infantile diarrhœal diseases, 2 from enteric fever, and 1 from scarlet fever, but not one from small-pox or diphtheria. The annual death-rate from these diseases was equal to 1·5, against 1·4 per 1000 in the large English towns. The deaths attributed to measles, which had been 18, 18, and 13 in the three preceding weeks, rose to 16, and comprised 12 in Belfast, 3 in Dublin, and 1 in Cork. The deaths referred to whooping-cough, which had been 15, 13, and 16 in the three preceding weeks, fell to 9, and comprised 6 in Dublin, 2 in Belfast, and 1 in Lisburn. The fatal cases of diarrhœa and enteritis (among infants under 2 years), which had been 5, 8, and 8 in the three preceding weeks, fell to 5, but showed no excess in any town. The 2 deaths from enteric fever were registered in Dublin and that from scarlet fever in Belfast.

The deaths referred to diseases of the respiratory system, which had been 134, 142, and 120 in the three preceding weeks, numbered 119 in the week under notice, and were 1 above the number registered in the corresponding week of last year. Of the 469 deaths from all causes, 149, or 32 per cent., occurred in public institutions, and 6 resulted from violence. The causes of 11, or 2·3 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest, and included 5 in Dublin; in the large English towns the proportion of uncertified causes did not exceed 0·8 per cent.

CHILDREN AND FRUIT.—At a meeting held on behalf of the National Children's Home and Orphanage at the Mansion House on April 25th, Sir Thomas Barlow said that we did not sufficiently realise the need for making food attractive for growing children. Meat should be well cooked with a good supply of properly cooked vegetables. The importation of bananas and oranges had had a far-reaching effect on the digestion of the children, and if the importation of fruit was interfered with, the children of the humblest classes would certainly suffer.

Correspondence.

"Audi alteram partem."

INFLUENCE OF FEBRILE CONDITIONS ON INOCULATION AGGLUTININS.

To the Editor of THE LANCET.

SIR,—In his adroit and skilful letter in your issue of April 22nd, replying to certain criticisms put forward by Professor Dreyer, Dr. Gibson, and myself, Dr. H. L. Tidy has unfortunately been misled into instituting a comparison between dissimilar materials. Our figures[1] were obtained from cases examined at a much longer average interval of time from their inoculation than Dreyer and Inman's figures for the healthy inoculated individuals[2] whom they examined just a year ago within some few months of their dates of inoculation. It follows that even had the individuals who constituted our material remained in perfect health instead of suffering from febrile disorder, they would still have exhibited a much lower range of agglutinin titre than Dreyer and Inman's subjects, since the agglutinin titre of inoculated persons falls with lapse of time. Hence our figures do not, as Dr. Tidy supposes, support his views, even in their greatly modified form, which he now appears to substitute for his original revolutionary contentions. Moreover, the manner in which Dr. Tidy uses the two sets of figures exposes him to further criticism. For it cannot be accepted as a legitimate statistical procedure to strike *means* as Dr. Tidy does from what are relatively small numbers of observations, where the range of individual variation is so enormous, as, for example, 74 observations in which the range of titre runs from 30 to 1390 agglutinin units, a forty-six-fold variation.

Owing to these misconceptions Dr. Tidy's main argument clearly falls to the ground. It is, therefore, unnecessary for me to trespass on your space by dealing with a number of subsidiary points in Dr. Tidy's letter, in which there are evident other misinterpretations or misunderstandings of what one or other of us has written on the subject of agglutination. I should, however, be glad to take this opportunity of saying, in reference to the "very emphatic" character which Dr. Tidy noted in our denials of his contentions, that while we thought it necessary to express ourselves as forcefully as possible, I trust Dr. Tidy will be willing to acquit our emphasis of any suspicion of intentional discourtesy.

I am, Sir, yours faithfully,

E. W. AINLEY WALKER.

University College, Oxford, April 24th, 1916.

TRANSMISSION AND EXAMINATION OF PLAGUE SPECIMENS.

To the Editor of THE LANCET.

SIR,—In the report of the Manchurian Plague Commission (1911) is a paper by Dr. Broquet recommending his solution—neutral glycerine 20 c.c, distilled water 80 c.c., calcium carbonate 2 gm —as a medium for plague material during transmission to the laboratory, by post or otherwise, in order to prevent putrefaction. It would appear that during the Manchurian outbreak this solution was extensively used with satisfactory results. As in South Africa specimens sometimes take several days to reach the laboratory, and are extremely liable to undergo putrefaction, the solution was welcomed as supplying a much-felt want; it was much used in sending specimens from Queenstown and district to Cape Town during the earlier part of the recent plague outbreak in the Cape Province. These specimens were three or four days, and sometimes longer, in transit. Usually cubes of tissue, measuring about one inch each way, were cut from the lungs, liver, spleen, &c., and forwarded in wide-mouthed bottles. The solution prevented putrefaction, but rendered smears much more difficult to fix on the slides. The best results were obtained by using the central parts of the cubes (least affected by the glycerine) for microscopic and inoculation purposes. It was, however, found that inoculations of such material gave negative

[1] THE LANCET, April 8th, 1916.
[2] THE LANCET, July 31st, 1915.

results in several cases in which there were strong microscopic, clinical or epidemiological reasons for suspecting plague, and it was deemed desirable to carry out bacteriological examinations and inoculation tests at the seat of the epidemic, reserving the Cape Town Laboratory for supplementary or confirmatory investigations. Subsequent experience fully confirmed these suspicions. In one recent case cubes of tissue obtained post mortem from a native child, sent from Queenstown to Cape Town on June 5th, 1915, in Broquet's solution, gave negative results in two guinea-pigs inoculated on the 8th, whereas a guinea-pig inoculated with fresh material on June 5th died of typical plague on the 11th.

It is clear from Dr. Broquet's original paper that stronger solutions have a devitalising effect. He states, however, that 20 to 25 per cent. solution of glycerine prevents the growth of other germs and preserves the virulence of the plague bacillus for eight or nine days, or, with the addition of calcium carbonate, for 13 days, but that the virus is attenuated, as shown by the lengthening of the period between inoculation and death of inoculated guinea-pigs. We are unaware whether his experiments were carried out during a Manchurian winter, but our experience in the warm climate of South Africa has been that transmission in 20 per cent. glycerine solution, even for three or four days, markedly reduces, or even entirely destroys, the virulence of the plague organism for guinea-pigs, and is thus apt to render the examination of material so transmitted useless or even misleading.

Glycerine is extensively employed in the preparation of calf lymph, in order to free the pulp from non-sporulating extraneous organisms. Its germicidal action is, however, greatly influenced by temperature. Dr. F. R. Blaxall[1] remarks: "Glycerine, in fact, has no germicidal action of itself, but in conjunction with heat it is a powerful germicide, and this action varies directly with the temperature." Glycerinated lymph pulp stored at or below freezing point shows practically no reduction in its original bacterial contents, but if kept at room or higher temperatures for a few days the reduction is marked, the lymph frequently becoming sterile in two or three days. We have found by direct experiment with cultures that glycerine rapidly affects the virulence of B. pestis when kept in contact with the organism for 12 hours at 37° C. or even at much lower temperatures. Further investigations are being carried out, but it seems highly probable that glycerine solutions of any strength are not suitable fluids in which to forward specimens of plague material for diagnosis by animal inoculation when the outside temperature is above freezing point.

The method of shaving the abdomen of a guinea-pig and rubbing in infected material, as advocated by Albrecht and Ghon, has not in our hands given satisfactory results when the virulence of the plague organism has been lowered by putrefaction or by preservation in alkaline glycerine solution. With putrefactive material the most reliable results have been obtained by preparing an emulsion in sterile beef broth or normal saline solution and inoculating several guinea-pigs subcutaneously with varying quantities of this emulsion. Four animals are generally employed, three being given 0·5 c.c., 0·25 c.c., and 2 drops respectively, and the fourth merely a prick with the needle of the inoculating syringe. Animals receiving the larger doses frequently die early from general septicæmia and without showing definite post-mortem or microscopic evidence of plague. Those receiving the smaller amounts often survive for five or six days, sometimes even for seven or eight days, and then die of plague. As a rule, the longer the period between inoculation and death the more characteristic are the naked-eye appearances in the spleen, liver, and suprarenal bodies. Guinea-pigs and other experimental animals have a certain "resistance" to plague, and when inoculated with mild strains, or with organisms the virulence of which has been attenuated by unfavourable influences of any kind, do not always develop the disease. Hence the importance of inoculating *several* animals and varying the dose. Even then a negative result cannot always be safely regarded as conclusive.

We are, Sir, yours faithfully,

J. A. MITCHELL, M.B., Ch.B. Glasg, D.P.H. Camb.,
Assistant Medical Officer of Health for the Union of South Africa.

G. W. ROBERTSON, M.R.C.S. Eng., L.R.C.P. Lond.,
Government Bacteriologist for the Cape Province.

Cape Town, March 4th, 1916.

[1] Report of Medical Officer to Local Government Board, 1902-1903.

FUNCTIONAL NERVOUS DISEASE.

To the Editor of THE LANCET.

SIR,—Dr. Elliot Smith's accusation that I have "used" a protest against Dr. Forsyth's statement "to attack the whole theory of the rational treatment of incipient mental disturbance" is, if Dr. Elliot Smith will pardon me for saying so, unworthy of him, both in manner and in substance—in manner because in the question-begging phrase "of course" he airily assumes that he must be right and I must be wrong, and in substance because I did not attack a whole theory or any part of a theory. I attacked a practice. I attacked it because I consider it pernicious and immoral, degrading to those who use it and brutalising to those on whom it is used; and I adduced convincing evidence that what I say is true. If Dr. Elliot Smith wishes to show that I am wrong he must either shake my evidence or show that my conclusion does not follow from it. He does neither. He says "of course" I am wrong. It is equally open to me to say that of course he is wrong, but I do not stoop to this method of controversy. But supposing I did attack the "theory" on which the practice of psycho-analysis is founded, does Dr. Elliot Smith assert, as his words imply, that this theory is the sole theory on which the rational treatment of incipient mental disturbance can be founded? If so, he is demonstrably and grossly wrong, and he has only to refer to THE LANCET of March 4th and 11th to see that he is wrong. This is, or was, a free country, and if Dr. Elliot Smith chooses to call the method of treatment that he describes a theory, and a whole theory, I shall not object, whatever I may think; but if he considers that it is psycho-analysis, or that it is novel, he is mistaken. Dr. Elliot Smith may call it what he likes, but it has always hitherto been called "obtaining the confidence of the patient," and every physician worth his salt has been practising it from the time of Æsculapius, and no doubt much longer.

As this controversy has been reopened, I may as well answer the letter in which Dr. Ernest Jones[1] attempts to "dissipate confusion" as to the meaning of psycho-analysis. This is how he attempts to dissipate confusion. He says that psycho-analysis denotes "(*a*) a certain technical method for the exploration of the unconscious mind?" I do not find in this any tendency to dissipate confusion. Quite the contrary. It would not dissipate confusion to refer a physicist to a certain technical (I thank thee, Dr. Ernest Jones, for teaching me that word) method for the exploration of the liquid solid, the refrigerating fire, or the bursting vacuum; and these things are precisely on a par with the unconscious mind. Next, psycho-analysis denotes "(*b*) the theory *necessarily* involved in the use of this method (one presupposing, among other things, psychical determinism, the law of causality, &c.)." If the theory, or the method, presupposes psychical determinism, and if by psychical determinism Dr. Ernest Jones means the negation of free will, then the theory, or the method, presupposes what is contradicted by the whole experience of the whole human race; and such a presupposition is an insecure foundation on which to build a theory or a method. Nor will it tend to dissipate confusion to presuppose the law of causality, until we know what is meant by the law of causality. If it means the law of causation then this expression has many different meanings, and confusion will not be dissipated until Dr. Jones tells us in which meaning he uses the term. Lastly, psycho-analysis "denotes the accompanying study of the subject-matter concerned." Concerned in what? In the technical method? Then, presumably, the subject-matter is the unconscious mind. It is the footless stocking without a leg. It is the knife that has neither blade nor handle. It is nothing. Concerned in the theory that presupposes a falsity and an ambiguity? Then I am afraid confusion will not be dissipated. Whether the patients I have seen who have suffered disastrously from psycho-analysis have, as Dr. Ernest Jones asserts, been treated by those who have not been competently trained, I do not know; but this I know, that they have been treated by men who have written freely on psycho-analysis, and therefore if they have not been competently trained they are doubly impostors.

Since Dr. Ernest Jones's letter appeared in THE LANCET, he has been lecturing on psycho-analysis to the Child Study Society, and has been telling the teachers of children that "there was too much repression of tendencies."

[1] THE LANCET, March 11th, p. 588.

This, in the mouth of a psycho-analyst, will be understood to mean sexual tendencies, and as the warning occurs immediately after Dr. Jones has been treating of "the question of sexuality in children," it is natural to suppose that he did mean sexual tendencies. If Dr. Jones did not mean that children are to be encouraged to masturbate, he has expressed himself very unfortunately, for his words, as reported, will bear this interpretation, and there is nothing in the "theory" of psycho-analysis to discountenance it.

I am, Sir, yours faithfully,

April 22nd, 1916. CHAS. A. MERCIER.

THE TRANSLATION OF JUNG'S ANALYTICAL PSYCHOLOGY.

To the Editor of THE LANCET.

SIR,—The Collected Papers on Analytical Psychology by Dr. C. G. Jung I find to be announced in a publisher's list as translated by Dr. Constance E. Long. Of nine papers (263 pages) especially translated from the German for this book six (224 pages) were done entirely by my wife and myself; a further two (26 pages) were completely revised and partly re-translated by myself.

I am, Sir, yours faithfully,

London, W., April 24th, 1916. M. D. EDER.

THREE CASES OF ANGINA PECTORIS TREATED BY A NEW METHOD.

To the Editor of THE LANCET.

SIR,—The treatment adopted in the following three cases of angina pectoris may throw additional light on this baffling affection.

Dr. X, an old friend of mine, had his first attack last summer while on holiday. Before this he was strong and healthy, a rapid and untiring walker, and his heart was sound. Owing to the war he had suffered many anxieties. His appetite failed and he lost steadily both energy and weight. About a week after his holiday the second attack occurred, and from that time the attacks were more frequent and of awful severity, often two or three on a day; the usual remedies, nitrite of amyl, &c., lost their effects. He then told me of his condition, calling me in to sign his last papers and save an inquest. Being laid up myself just then, I handed my friend over to a colleague, from whom he derived the greatest comfort and relief. By my advice he took absolute rest in bed for three or four weeks, and there was no return of the attacks, but he had severe after or minor pains in chest and left arm; also on the slightest exertion these pains attained ominous forebodings of a severe spasm.

During my own illness I reflected on my friend's sad state, and it struck me that, whatever the original cause, if the minor pains could be got rid of the major would not follow, and that hope of ultimate recovery would be considerable. I formed the opinion that the minor pains were due to *partial* constriction of the small vessels, and that the major were due to *entire* constriction. I then considered, mentally, a small vessel thus constricted, and that forces acting either in the line of the vessels or transversely would mechanically release the constriction, and that similar results would in general follow where there was a condition of tortuosity. Early in December of last year I again called on Dr. X after some weeks, and found him in much pain in both arms and chest. At once I got him to grasp the top bar of the bed with both hands, letting most of his weight fall on the now strongly stretched arms for some 40 seconds. After a short rest he repeated the process some five or six times. Result: Immediate cessation of all pain in arms and some relief of the chest. I now got him on the floor to grasp the bar at the end of the bed with both hands behind his back, bending forward at an angle of about 60°, the chest thrown forward, and the head back, thus subjecting the muscles of the affected area to strong tension. This he repeated some half-dozen times, each lasting about 40 or 50 seconds. Result: Immediate cessation of all pains in the chest, the sense of constriction completely vanishing. He now went to his bath, and for the first time the exertion of washing caused only the merest suspicion of the old ominous forebodings of ill. For some weeks the process was continued about every two hours, the minor pains occurring with less severity and frequency; and it is important to note *that on no occasion did the stretching fail to give immediate relief*, though the operation must have been performed hundreds of times. No medicine was taken. Dr. X is now at work and able to walk with almost his old rapidity.

The next patient, aged 35, was employed in lifting heavy parcels. His attacks were severe and only ceased on inhaling nitrite of amyl. When he came to me a few weeks ago he was suffering from rather severe minor pains. He always knew when the major attack might be expected from the increasing severity of the former. I gave him no medicine and explained to him the operation mentioned. Result: Immediate cessation of pains on every occasion but one, *and absolute stoppage on three or four occasions of the major spasm* that he knew would otherwise develop.

The third case was that of a French polisher, aged 52. In his case relief was not so rapid, though after a minute or two he described his sensation of comfort as accompanied by a "tingling and rushing of blood over his face and neck." He has also been under this treatment for some three weeks only and is able to rest in bed, which the previous patient, unfortunately, was unable to do.

As to the cause, or even predisposing cause, of this affection I am of opinion that we know very little. If I were to draw a conclusion from these three cases, I should be inclined to say that, as a predisposing cause, long-continued anxiety or worry plays a large part. As to the cause of the pain, I believe that *partial* constriction of the vessels gives rise to the minor, and that complete constriction causes the severe, or major, attacks, and that the greater the area involved and the more absolute the constriction of the vessels the more severe is the attack. Also, that the conditions of atheroma and arterio-sclerosis, with consequent loss of arterial elasticity, are a very large factor of the pain, and that they are in no way a part of either the original or predisposing cause. We rarely hear of anyone of 60 suffering from angina pectoris, and after 65 the affection is practically unknown; so that the more pronounced the atheroma, the more immune we become. I also conclude that there is no distinction, beyond the degree of pain, between true angina and false. The child simply suffers less because better equipped with elastic tissue.

If any sufferer of my own profession should care to write to me for further information, I need hardly say it will give me great pleasure to answer any questions that may contribute to his comfort.

I am, Sir, yours faithfully,

SAMUEL CONSTABLE.

25, Belmont-road, West Green, N., April 22nd, 1916.

SHAKESPEARE AND MEDICINE.

To the Editor of THE LANCET.

SIR,—You may perhaps be able to find room for the following brief notes relating to Shakespeare and medicine.

1. *A medical pall-bearer.*—The *Evening Standard* of March 15th, 1913, recorded the following inscription found upon a dilapidated tombstone in the old Masonic graveyard of Fredricksburg, Virginia:—

> Here lies the body of
> EDWARD HELDON,
> Practitioner in Physics and Chirurgery. Born in Bedfordshire, England, in the year of our Lord 1542. Was contemporary with and one of the pall bearers of William Shakespeare of the Avon. After a brief illness his spirit ascended in the year of our Lord 1618, aged 76.

The inscription is in old English letters, dim but traceable. It must be added, however, that the *Evening Standard* of three days later contained a letter signed "Edward S. Dodgson, M.A. Oxon.," throwing considerable doubt upon the authenticity of the above inscription.

2. *Dr. Hall's patients.—Notes and Queries*, August 28th, 1915, contains a list of patients attended by Dr. John Hall, Shakespeare's son-in-law and physician. This list, compiled by Hall himself, mentions "Mrs. Hall, my wife," and "Elizabeth my onely daughter," but does not mention Shakespeare.

3. *A medical writer on Shakespeare.*—A little known but excellent work is "Shakespeare and his Times," by Nathan Drake, M.D. (1766–1836), two volumes, 4to, 1817. This work was favourably reviewed by the *Gentleman's Magazine* at the time of its publication. Dr. Drake also wrote (1828) "Memorials of Shakespeare," a sort of anthology of all that had been written to date upon the poet and his works both at home and abroad. Both of Dr. Drake's works are in the British Museum.

4. *The cause of Shakespeare's death.*—There seems to be little doubt that the poet's death was occasioned by inebriety. A month before he died Shakespeare indulged in a symposium with his boon companions Michael Drayton and Ben Jonson, caught a chill on his way home, and did not leave his bed again. These facts are recorded in the MS. diary of the Rev. John Ward, vicar at the time of Stratford-upon-Avon. The vicar's diary is in the possession of the

Medical Society of London and in the keeping of the society's learned and courteous librarian, Mr. George Bethell.

I am, Sir, yours faithfully,

S. D. CLIPPINGDALE, M.D. Aberd.

Holland Park-avenue, W., April 23rd, 1916.

THE WITTENBERG CAMP.

To the Editor of THE LANCET.

SIR,—Psychology in relation to the war has been prominent in your columns of late. In connexion therewith the letter of Sir William Milligan is of considerable interest. The natural indignation and horror at the Wittenberg atrocities will, of course, be shared by every decent human being in the world. It is perfectly certain that *if the facts were allowed to be known by them* a large proportion of German doctors would repudiate the action of Aschenbach with shame and loathing. Does Sir William Milligan really think that all our confrères in Germany, who have been welcomed and honoured in this country, have suddenly become "beasts"? The idea is unthinkable and absurd. To pass such a wholesale condemnation upon them as Sir William Milligan suggests would be hasty, undignified, and on a moral and intellectual level with the banishment of German music from our shores. When the passions of the present time have disappeared no one will regret more than Sir William Milligan himself the ill-considered proposal he is now making.—I am, Sir, yours faithfully,

Finchley, April 23rd, 1916. J. S. BOOTHROYD, M.D.

Obituary.

JAMES HARPER, M.D. LOND., M.R.C.S.,

COLONEL AND ASSISTANT DIRECTOR OF MEDICAL SERVICES, 1ST LONDON DIVISION (T.F.).

WE have already recorded the death of Dr. James Harper, which occurred on March 24th. He was born at Leith in 1857, but his father, a medical practitioner, very shortly afterwards moved to Windsor, where Dr. Harper's boyhood was spent. He was educated at Amersham Hall School, Reading, and having matriculated at the University of London he entered as a student at St. Bartholomew's Hospital. His career at "Bart.'s" was very successful. He passed his medical examinations with ease, took honours in obstetric medicine at the Final M.B. Examination, and in 1883 graduated as M.D. Lond. He filled the office of house surgeon at St. Bartholomew's Hospital and afterwards was successively house physician to the Royal Hospital for Diseases of the Chest, and resident medical officer and anæsthetist to the Hospital for Women, Chelsea. Having thus fitted himself for practice he took a house in South Kensington and quickly gathered about him a large practice.

But Dr. Harper's activities were not limited by the demands of his practice, and for many years he devoted a good deal of time to the Medical Corps of the Volunteers. Joining the Volunteer Medical Service Corps in 1894 he in due course became captain, major, and then lieutenant-colonel in that force. In April, 1908, he was appointed to the 3rd London Field Ambulance, and in 1912 was promoted to the rank of colonel and made A.D.M.S., 1st London Division. He was intensely interested in his military duties and threw himself into the work of training his ambulance units with great enthusiasm and success. At the outbreak of the war he laid aside his practice and devoted himself wholly to his work as A.D.M.S., and he only gave up this work when he was a broken man, too ill to do it.

One who knew him well writes:—"His great ability and industry were associated with such a robustness of character and also such a merry humour that all who knew him were drawn to him and were helped by his example. In his private practice his patients highly valued him, for his medical knowledge and experience were combined with such kindliness of heart and strong commonsense that they found him to be not only a wise medical adviser but a strong and true friend. The high esteem in which he was held was strikingly shown by the large gathering of mourners who attended his funeral service. Harper was a man of fine presence; and in his physical vigour as well as in his strength of character, tempered by a deeply religious spirit, he showed the influence of his Scottish parentage. About four years ago he underwent a serious operation, and although he recovered and resumed his practice his work afterwards was often carried out under difficulty. Early this year signs of increasing illness showed themselves, and in spite of rest and the efforts of trusted and attached medical friends, his weakness increased and he passed away on March 24th. None who ever knew James Harper will forget him, for his high standards and strength of character made him a marked man."

Dr. Harper was twice married, first to Helen Watson Brand, daughter of the late Alexander Brand, United States Consul, Aberdeen, and later to Annette Ellen Grant, youngest daughter of the late Admiral Henry Duncan Grant, C.B. He left three sons and two daughters, and one son was lost in the explosion on the *Princess Irene*.

CORNELIUS HANBURY, M.R.C.S., L.S.A., F.C.S., F.I.C.,

CHAIRMAN OF THE BOARD OF DIRECTORS OF ALLEN AND HANBURYS, LIMITED.

Mr. Cornelius Hanbury, of the Manor House, Little Berkhampstead, died on April 11th, aged 88, having been born on Nov. 29th, 1827. He was the only son of Cornelius Hanbury, of Plough-court (who died in 1869), and his second wife, Elizabeth, daughter of John Sanderson of Avonthorpe and cousin of the present Lord Sanderson. Mrs. Cornelius Hanbury was well known for her Christian and philanthropic work in connexion with the cause of anti-slavery and the prison reforms of Elizabeth Fry, dying in 1901 at the remarkable age of 108. Both Mr. and Mrs. Cornelius Hanbury were members of the Society of Friends and ministers in the society. Mr. Cornelius Hanbury, the son, after education under a private tutor became a student at St. Bartholomew's Hospital. From 1845 to 1850 he was apprenticed to Dr. (afterwards Bishop) Henry Callaway, and lived with him in Bishopsgate-street for about a year. In 1849 he became M.R.C.S., and in 1850 L.S.A. In 1876 he was elected treasurer of the Pharmaceutical Society, but resigned this office in 1878. He was a member of the council of the society from 1875 to 1878. In 1871 he was nominated a governor of St. Bartholomew's Hospital and for some years held the office of almoner. Towards the end of 1849 Mr. Cornelius Hanbury first began to attend daily at the pharmacy at Plough-court, then under the control of his uncle, Daniel Bell Hanbury, and his father, Cornelius Hanbury, senior. There he became intimately associated with his cousin, Daniel Hanbury, F.R.S., who made some important scientific contributions to materia medica.

In 1868, with the retirement of Daniel Bell Hanbury and Cornelius Hanbury, senior, the two cousins became the acting partners of the firm. On the retirement of Daniel Hanbury in 1870, Cornelius Hanbury became proprietor of the business. A comparatively young man, he had the sole control of a well-appointed and established business, which, starting in the hands of Sylvanus Bevan in 1715, had grown up with the sound traditions laid down by its founder. A generation of Hanbury control had preserved the same traditions. Mr. Cornelius Hanbury, while maintaining the same ideals, looked far ahead and realised the possibilities of specially developing the wholesale and manufacturing lines of the firm. Years of foresighted expenditure and gradual expansion have followed, resulting in the many undertakings and branch establishments of this firm not only in this country but in various parts of the world. Cornelius Hanbury combined strength of purpose with the utmost simplicity. His life and example were an inspiration to all those with whom he came in contact, and the news of his death will be felt, not only by those at home, but by a great number of the firm's employees now serving at the front. The general affection and respect of the firm's employees towards the chairman were shown in 1896, when the staff presented Mr. Cornelius Hanbury with a portrait of himself painted by Mr. Percy Bigland. He married in 1850 Sarah Jane, daughter of Frederick Janson, of Lloyds and Stoke Newington. She died in 1903. His elder and only surviving son, Frederick Janson Hanbury, F.L.S., now to become chairman of the board of directors, was born at Stoke Newington on May 27th, 1851. Though born and brought up as members of the Society of Friends, both Mr. Cornelius Hanbury and his wife and children joined the Church of England. The interment took place at Highgate cemetery on April 14th, the funeral service having been held at St. Andrew's, Little Berkhampstead.

The War.

THE CASUALTY LIST.

THE following names of medical officers appear among the casualties announced since our last issue :—

Wounded.

Lieutenant G. L. Kennedy, R.A.M.C., attached to the Royal Warwick Regiment.
Captain H. G. Peake, R.A.M.C.

DEATHS AMONG THE SONS OF MEDICAL MEN.

The following sons of medical men must be added to our lists of those who have fallen during the war :—

Lieutenant A. Mathews, Cheshire Regiment, only son of Mr. F. E. Mathews, L.R.C.P., M.R.C.S., of Nantwich, Cheshire.
Lieutenant F. R. Heuston, Canadian Infantry, last surviving son of the late Dr. F. T. Heuston, of St. Stephen's-green, Dublin.

THE REBELLION IN DUBLIN.

The unpreparedness of the Government has subjected the capital of Ireland to unmeasured inconvenience as well as to grave humiliation. The roll of killed and wounded following on the armed revolt is already known to be slight, and the actual figures will possibly be in the possession of our readers before this issue of THE LANCET appears. But from the medical point of view the figures, when they are forthcoming, will not represent the damage done; the evil of such catastrophes is far-spreading and difficult to control. Mentally and morally, all the weaker and less stable inhabitants of a district which has suffered under an armed *émeute* are definitely damaged. This fact rapidly makes itself known to all medical practitioners and is reflected in all hospital statistics. At the same time the machinery for securing the public health is dislocated. It is therefore of the utmost importance that order should be re-established in Dublin and law again made effective with the least possible delay. Dublin is not a city where the conditions of public health can stand much deterioration.

BENEVOLENT FUNDS FOR THE SERVICES AUXILIARY TO THE ROYAL ARMY MEDICAL CORPS.

It has been suggested that benevolent societies be formed for the benefit of the families of officers and other ranks of the Medical Services auxiliary to the Regular Royal Army Medical Corps—viz., the Special Reserve, the Territorial Force, and New Army. Funds would be raised by voluntary subscriptions, and it has been proposed that each branch of the Service should appoint a committee of 5 to 7 members to administer its own funds.

A meeting, to be presided over by the Director-General, will be held in the lecture theatre of the Royal Army Medical College, Grosvenor-road, S.W., on Wednesday, May 10th, at 3 P.M., and it is hoped that as many officers as possible will attend. In the meantime any inquiries may be referred to Lieutenant-Colonel G. St. C. Thom, R.A.M.C., War Office, S.W.

THE CONDITIONS OF EXCHANGE OF INVALID PRISONERS.

We learn through a German source[1] of the publication by the Prisoners' International Agency of a paper entitled "Nouvelles de l'Agence Internationale des Prisonniers de Guerre." It is to appear weekly at a cost of 5 francs per annum. The first number contains the conditions regulating the return to their own country or the sending to Switzerland of invalid prisoners of war. The conditions which entitle a private to be sent back home are as follow: (1) Complete or partial loss of one or more limbs (at the least, a foot or an arm); (2) loss of use of a limb through ankylosis, permanent palsy, atrophy or contraction of muscles, pseudarthrosis, spinal injury which affects movement materially; (3) confirmed palsy, important from its site or extent; (4) brain injury with severe consequences (hemiplegia or impairment of cerebral function); (5) spinal injury with severe consequences (paraplegia, various palsies); (6) blindness of both eyes; (7) considerable mutilation of the face, severe injuries of the mouth; (8) permanent cachexia from wounds; (9) advanced pulmonary tuberculosis; (10) cachexia due to internal disease; and (11) incurable mental disease. For officers and non-commissioned officers the conditions are slightly different: (1) applies to complete or partial loss of *several* limbs; (4), (5), (6), (8), (9), (10), and (11) apply exactly; (2), (3), and (7) do not apply at all. The Red Cross requests that this list should be used when applications are made in order to avoid disappointment. To entitle to treatment in Switzerland the conditions are as follows: (1) very extensive skin diseases, commencing malignant tumours, extensive glandular swellings, chronic glandular suppuration; (2) chronic blood diseases (leukæmia, pernicious anæmia); (3) extensive mutilation of the face, severe injuries to the mouth insufficient to entitle to an exchange; (4) blindness of one eye, with diminution of the sight of the other by one-half or less (glasses necessary); (5) double deafness; (6) moderately advanced pulmonary tuberculosis; (7) severe nervous diseases, especially severe hysteria; (8) severe heart disease; (9) severe chronic gastric disease demanding prolonged special dietetic treatment; (10) loss of a limb, at the least of a hand or a foot (for officers and N.C.O.'s); (11) shortening or marked stiffness resulting in considerable impairment of the limbs, pseudarthrosis, muscular atrophies; and (12) chronic diabetes or nephritis with constant presence in the urine of a considerable quantity of sugar or albumin. Germany asked to have severe rheumatism recognised, France agreed while asking for more exact definition. We have already noted that a sanitary commission of 10 Swiss doctors was appointed to see that these conditions are adhered to. Every prisoner has the right of demanding an examination by the commission without risk of punishment if his claim should be rejected. In later numbers of the *Nouvelles* the list of exemptions for Switzerland is further increased by the addition of commencing asthma, chronic poisoning, well-marked articular gout, general debility, all consequences of a disease or injury giving rise to unfitness for service of at least a year's duration. It will be seen that the mesh is much wider for treatment in Switzerland than for return home. In another paper (*Deutsch. Med. Wochenschr.*, 1916, No. 12) it is stated that certain conditions are to exclude from Switzerland—viz., all severe nervous and mental diseases requiring institutional treatment, chronic alcoholism, contagious diseases of any kind at their infectious stage (infectious gonorrhœa, primary and secondary syphilis, trachoma, &c.). These conditions affect at the moment only French and German prisoners. No reciprocal engagements for sending invalid officers to Switzerland have yet been arrived at between Germany and Great Britain.

[1] War Supplement to the Münchener Medicinische Wochenschrift, 1916, No. 12.

THE SALE OF NARCOTIC DRUGS TO SOLDIERS.

In commenting upon the ease with which such potent drugs as morphine and cocaine could be purchased by soldiers, even without any infringement of the existing law affecting the sale of poisons, it was intimated in THE LANCET of Feb. 26th that the military authorities might find it desirable to take steps to prohibit the sale of such drugs to men on active service. Action has now been taken in this direction, a regulation having been made under the Defence of the Realm Act which provides that the Admiralty or Army Council may by order prohibit, either absolutely or except on compliance with such conditions as may be specified in the order, the sale or supply to or for any member of any of His Majesty's Forces of any narcotic or stimulant drug or preparation specified in the order, and if any person acts in contravention of any such order he shall be guilty of a summary offence against these regulations. Should the naval and military authorities deem it expedient to use their powers in pursuance of this regulation the position of pharmacists would be made clearer. While, no doubt, in the majority of cases pharmacists would refuse to sell narcotic drugs to soldiers in uniform—except, of course, to officers of the Royal Army Medical Corps—unless they were satisfied that the circumstances of a particular case justified the transaction, it can

be well understood that it is not always an easy procedure to refuse to grant a customer's legal request. If an order were made absolutely forbidding such transactions, a soldier would not put the pharmacist in the position of having to decline to sell such drugs, and the pharmacist himself would be satisfied in the knowledge that a disappointed client could not get what he wanted at another chemist's shop in the same area.

THE PROPOSAL FOR A COLLEGE OF NURSING.

We have referred already to the proposal received from the matron-in-chief of the Joint War Committee of the British Red Cross Society and the Order of St. John of Jerusalem, in a letter signed by the Hon. Arthur Stanley, chairman of the Committee, suggesting the foundation of a College of Nursing. We have now received a copy of a letter which Mr. Stanley is sending to the authorities of more than 200 of the nursing schools of the United Kingdom. The idea is that the College shall take its place eventually as the central organisation of the nursing profession of the United Kingdom. In the first week in April a conference was held at St. Thomas's Hospital, when over 200 representatives were present from England, Wales, Scotland, and Ireland. Mr. Stanley explained the circumstances which led to the establishment of the College of Nursing, and laid stress upon the desire of the council to form as speedily as possible such a Consultative Board as would be representative of all parts of the United Kingdom and of all branches of nursing. Nursing authorities are requested within the next month to nominate not more than two representatives upon the Consultative Board of the College, the duties of which will be to advise the council in many matters of policy and procedure. The council numbered at first 15 persons, but has been increased by coöptation to 23, consisting largely of the matrons of some of the chief hospitals and lady-superintendents of some infirmaries, together with six members of the medical profession, Sir Cooper Perry being the honorary secretary. This number may be increased to 30 members. The College has been registered as "Limited," as to do otherwise would have occasioned delay and difficulties, and the Memorandum and Articles of Association have been drawn to give the widest possible powers. It is proposed that the College, which in its early years will be largely guided by the experience of the heads of the various training schools, who form a majority of the first council, shall, when it attains maturity, become broad-based and democratic in constitution and self-governing. Some objects aimed at are uniformity of curriculum, the one-portal system of examination, only one certificate of general training for all nurses wherever trained, inducing backward institutions to improve their curricula and improved accommodation for study, and the establishment of local boards with power to act in their respective areas with the powers, authorities, and discretions vested in the council, and eventually, when substantial unanimity has been reached, to present a Bill to Parliament to gain legal status.

WOUNDED ALLIES RELIEF COMMITTEE.—To the work of this Committee there has been added recently the maintenance of a large hospital at Lyons. This hospital, which was formerly the Lycée de Saint Rambert, and has been used for hospital purposes by the French, holds 300 beds, and will take the place of the Committee's Military Hospital at Dieppe, which is now inadequate to the demands made upon it. Dr. V. H. Rutherford, who was one of the passengers on the ill-fated *Sussex*, is now at Lyons on behalf of the Committee, superintending the arrangements for the transference of the smaller hospital to the larger one. The staff of the hospital, like that of the Military Hospital maintained by the Committee at Limoges, is English.

BRIGHTON MILITARY HOSPITALS.—On the evacuation by the Indians of the three great hospitals used by them at Brighton—the Royal Pavilion Buildings, the Kitchener Hospital (formerly the workhouse), and York-place school—the buildings were reorganised to receive British wounded. On April 15th the first batch arrived. There were 90 cot cases and 81 sitting, and they were taken to the Kitchener Hospital. The Royal Pavilion Hospital is to be used exclusively by soldiers who have lost a limb.

OBITUARY OF THE WAR.

WALTER LINNEY HAWKSLEY, M.B., CH.B. LIVERP., D.P.H.,

MAJOR, ROYAL ARMY MEDICAL CORPS (T.).

Major Walter Linney Hawksley, who died on active service in France, was the eldest son of the late Dr. H. L. Hawksley, of Southport. He was educated at University School, Southport, proceeding afterwards to Liverpool University, qualifying in 1904. He had a long connexion with the Second West Lancashire Field Ambulance, and was with this unit at their annual encampment when war broke out, and at once proceeded to active service, being promoted major in April, 1915. Dr. E. W. Hope, medical officer of health of Liverpool, writes: "The tragic death of Major Hawksley, whilst on active service in France, removes from the service of the Liverpool corporation a brilliant assistant medical officer. Dr. Hawksley had always been associated with Liverpool, and was a graduate of the Liverpool University. A university career of distinction was followed by a period of usefulness spent in work at the Liverpool South Dispensary and the David Lewis Northern Hospital. His first association with the corporation was as a resident medical officer at the Fazakerley Hospital. Administrative ability and enthusiasm for his work received deserving recognition when he was given control of the tuberculosis wards. Subsequently he held the post of assistant school medical officer, and ultimately was appointed an assistant medical officer of health to deal with problems relating to tuberculosis. Following the passing of the National Insurance Act, Dr. Hawksley naturally attained the additional position of acting chief tuberculosis officer, a post for which his previous experience gave him exceptional qualification. The harmonious relationship which now exists between the Insurance Committee and the corporation serves as a lasting monument to his unfailing tact and administrative ability, for upon his shoulders fell much of the original work of organising the Liverpool Tuberculosis Scheme. The rare combination of sound medical knowledge and administrative ability which Dr. Hawksley possessed led those who best knew him to predict a brilliant and important career. Of his services to his country since war was declared little is known to those at home, but if his military duties were performed with the enthusiasm, tact, and efficiency which characterised his work as a civil servant, the loss to the army is as deplorable as to the city of Liverpool. His interests were many-sided, for besides the numerous committees of charitable organisations on which he served the Atmospheric Pollution Committee has reason to feel the loss of an enthusiastic worker. Admired by his acquaintances, he was loved by his friends, and of the latter he had many, for a charming disposition attracted those with whom he came in contact. All who knew him will deeply sympathise with his widow and two children in their tragic bereavement."



FREDERIC FRANCIS GERMAN, L.R.C.P., L.R.C.S. EDIN.,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain Frederic Francis German died at his residence at Seaforth, Liverpool, early in April, at the age of 56. For over 30 years he was in practice at Seaforth, and took a keen interest in the life of the township. He had occupied the position of chairman of the urban district council and was a prominent Freemason. Captain German was a native

of Burslem, Staffordshire, and was educated at Liverpool University, subsequently proceeding to Edinburgh, where he qualified in 1881. He then settled at Seaforth, and at the time of his death was one of the oldest medical practitioners in the district, and was held in very great esteem, as was evidenced by the large numbers who attended his funeral, which was accompanied with full military honours. Captain German was medical officer of health of the Waterloo-with-Seaforth urban district council, physician to the Waterloo and District Hospital, county police surgeon, and medical officer of the Liverpool Overhead Railway Company. He was a keen Volunteer under the old system, and for some years held the rank of surgeon-captain in the Lancashire (Volunteer) Artillery. At the outbreak of war he was appointed surgeon in charge of the military hospital at Seaforth Barracks, and in June, 1915, was gazetted as temporary captain in the Royal Army Medical Corps. He leaves a widow, a son (a staff-sergeant in the Royal Field Artillery), and a daughter.



Medical News.

SOCIETY OF APOTHECARIES OF LONDON.—At examinations held recently the following candidates passed in the subjects indicated:—

Surgery.—H. Archer (Sections I. and II.), Bristol; E. V. Beaumont (Sections I. and II.), St. Mary's Hospital; M. J. Byrnes, Cork; E. N. Glover (Sections I. and II.), Guy's Hospital; and E. O. Morrison (Sections I. and II.), Cambridge and St. Mary's Hospital.

Medicine.—M. J. Byrnes, Cork; and M. Dwyer (Section II.), St. Thomas's Hospital.

Forensic Medicine.—J. S. Bhajiwalla, London Hospital; H. N. D. Richards, St. Mary's Hospital; G. G. Rigby, Manchester; C. Segal, Berne; M. B. M. Tweed, Guy's Hospital; and L. Zarchi, Petrograd and Royal Free Hospital.

Midwifery.—C. P. Barber, Charing Cross Hospital; T. F. Reason, St. Mary's Hospital; and I. H. Syed, Bombay and Manchester.

The Diploma of the Society was granted to the following candidates, entitling them to practise medicine, surgery, and midwifery:—E. V. Beaumont, M. J. Byrnes, and E. N. Glover.

UNIVERSITY OF GLASGOW.—At the graduation ceremony on April 25th the following degrees were conferred:—

Doctor of Medicine (M.D.).—Dagmar Florence Curjel.
Master of Surgery (Ch.M.).—Robert Buchanan Carslaw.

Among the University prizes and special class prizes gained were the following:—

Thesis for M.D.—Matthew Young, M.D., Bellahouston Gold Medal.
Research in Anatomy.—Matthew Young, M.D., Struthers Gold Medal and Prize of £20.
Chemistry.—John B. Sandford, George Roger Muirhead Prize of £2 5*s*.
Laryngology and Rhinology.—Kenneth J. T. Wilson, Asher Asher Gold Medal.
Physiological Physics.—William Napier, Arnott Prize of £25.
General Physics.—William L. Templeton, Arnott Prize of £15.

CENTRAL MIDWIVES BOARD.—At a meeting of the Central Midwives Board, held at Caxton House, Westminster, on April 13th, with Sir Francis H. Champneys in the chair, further correspondence was considered with Dr. E. J. Maclean, of Cardiff, with regard to the acceptance of the curriculum and system of training which he proposes to adopt in connexion with the Glamorgan County Free Midwifery Students as a compliance with the requirements of the new Rules C. 1 and 2. The Board decided that Dr. Maclean be informed that it appears to the Board that the course of instruction given by him (which the Board fully believes to be excellent) is given to women with a view to an examination to be held for the purpose of ascertaining whether they are or are not fit to be granted scholarships in midwifery. Such a course of instruction would be antecedent to any definite pupilage in midwifery, and could not therefore be considered as forming part of any midwifery curriculum. A letter was considered from Dr. W. E. Fothergill, one of the Board's examiners at the Liverpool and Manchester Centre, suggesting amendments to Rules C. 1 and 2 with a view to meeting the case of candidates who have had a three years' training in a public special hospital for women or a public special hospital for children. The Board decided that Dr. Fothergill be informed that the Board has already completed the revision of the Rules and has forwarded them to the Privy Council for approval. The matter is consequently out of the hands of the Board. A letter was considered from the county medical officer of health of Devon, calling the attention of the Board to an apparent case of "covering" an uncertified woman by a registered medical practitioner in the county. The Board decided that the papers in the case be forwarded to the General Medical Council with a request that they will take such action in the matter as may seem fit to them, and that, if so desired, the Board will undertake to appear as prosecutors in the case. A letter was considered from the secretary of the Association for Promoting the Training and Supply of Midwives, suggesting that the Board should apply to the Privy Council for power to require the surrender of the certificate of a deceased midwife. The Board decided that the Association for Promoting the Training and Supply of Midwives be informed that the new Rules are already in the hands of the Privy Council, and that the suggestion made by the association does not commend itself to the Board, inasmuch as it would be at variance with the custom relating to other certificates and diplomas, none of which, so far as the Board is aware, have to be surrendered on death. The Board feels sure that any request for special powers in the case of midwives would be refused. It is not the possession of a certificate but the presence of her name on the Roll which enables a woman to practise as a midwife.

A special meeting of the Board was held at Caxton House, Westminster, on April 14th, with Sir Francis Champneys in the chair, when a number of midwives were struck off the Roll for non-compliance with various Rules.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—Demonstrations of specimens in the Museum of the Royal College of Surgeons of England will be given in the theatre of the College by Mr. S. G. Shattock, the pathological curator, at 5 P.M. on the following days: Monday, May 1st, on Fractures; Monday, May 8th, on Foreign Bodies; and Monday, May 15th, on Results of Inflammation. The demonstrations are open to medical students and practitioners. First-aid and ambulance students desirous of attending will also be admitted.—The subject for the Triennial Prize to be awarded in 1918, is "The Development of the Hip-Joint and the Knee-Joint of Man." This prize consists of the John Hunter Medal executed in gold to the value of 50 guineas, or, at the option of the successful author of the dissertation, of the medal executed in bronze, with an honorarium of £50. The subject for the Jacksonian Prize for the present year (1916) is "Methods and Results of Transplantation of Bone in the Repair of Defects caused by Injury or Disease." The subject for the prize for 1917 is "The Causation, Diagnosis, and Treatment of Traumatic Aneurysm, including Arterio-Venous Aneurysm." The dissertations for the Jacksonian Prize for 1916 must be delivered at the College not later than 1 o'clock P.M. on Saturday, Dec. 30th, 1916.

POOR-LAW MEDICAL OFFICERS' ASSOCIATION OF ENGLAND AND WALES.—At the last meeting of the council of this association a letter was read from the Local Government Board in answer to an inquiry by the honorary secretary (Dr. Major Greenwood) as to whether drugs that had risen in price greatly during the war did not come under the description of "expensive medicines," and whether they should not be included among those that boards of guardians were required to furnish. The Board replied that, while they have recommended that "expensive medicines" should be supplied at the cost of boards of guardians, they have not issued any regulations on the subject, and that the arrangements to be made in individual cases would depend on the terms of the agreement between the medical officer and the guardians. The honorary secretary said that it was clear from this that the provision of "expensive medicines" was not compulsory on boards of guardians, and appeared to be only an act of grace on their part. That being so, they could not be compelled to provide the cost of drugs that had become expensive through the war. It would appear that the guardians generally throughout the country had for many years agreed to pay the cost of certain drugs, and by raising the salaries of medical officers in not a few cases during the war had practically met the additional cost of drugs due to the war. It seemed to him that no further pressure could be put on them to do more at the present time. The arrangements for the annual meeting were considered, when the council decided that it should be held during the first week of July, the particular day to be fixed later by the honorary secretary; only formal business was to be transacted, and there was to be no dinner. It was

also resolved that the next council meeting should take place an hour before the annual general meeting, and that both should be at the same place, and that, if possible, the office of the association at 9, Copthall-avenue, should be utilised for that purpose, as owing to the war the attendance was not likely to be very large.

THE LATE DR. WILLIAM ALLAN JAMIESON.—Dr. W. A. Jamieson, a late President of the Royal College of Physicians of Edinburgh, died at his residence, Charlotte-square, Edinburgh, on April 21st, aged 77. He received his medical education at Edinburgh University and at Vienna, graduating M.B. and C.M. Edin. with honours in 1865. In 1877 he took the M.D. of his University and the F.R.C.P. Edin. He was surgeon to the King's Body Guard in Scotland, the Royal Company of Archers, a Knight of Grace of the Order of St. John of Jerusalem in England, and held the Royal Household Jubilee medal of 1897 and the Coronation medal of 1911. Dr. Jamieson, who was an LL.D. of Edinburgh, was a well-known authority on skin diseases.

THE ROUTE OF THE ORIENT LINE STEAMERS.—The Orient Line to Australia announce that by direction of His Majesty's Government their steamers will, until further notice, proceed to and from Australia by way of the Cape of Good Hope, calling at Cape Town outwards and Durban and Cape Town homewards. The first sailing of this new service will be from London on June 2nd.

THE Wellcome Historical Medical Museum will be reopened on Wednesday next, May 3rd. A special exhibition of Japanese charms and amulets of medical interest, lent by Mr. W. L. Hildburgh, M.A., Ph.D., will be on view, and should prove of exceptional interest to students of medical folk-lore. The museum will be open from 10 A.M. to 6 P.M. daily, and from 10 A.M. to 1 P.M. on Saturdays, until further notice.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).
When the application of a Belgian medical man would be considered the advertisers are requested to communicate with the Editor.

BIRMINGHAM AND MIDLAND EYE HOSPITAL, Church-street, Birmingham.—Resident Surgical Officer. Salary from £200 to £300 per annum, with board, residence, &c.

BOURNEMOUTH HOSPITAL FOR SICK AND WOUNDED, Boscombe.—House Surgeon for six months. Salary £125 per annum, with board, lodging, and washing.

BRIGHTON COUNTY BOROUGH ASYLUM, Haywards Heath.—Temporary Resident Assistant Medical Officer. Salary 25 guineas a month.

BRISTOL ROYAL INFIRMARY.—House Physicians and House Surgeons. Salary at rate of £120 per annum, with board, apartments, and laundry.

BURNLEY, VICTORIA HOSPITAL.—Female House Surgeon. Salary £160 per annum, with residence, board, and washing.

BUXTON, DERBYSHIRE, DEVONSHIRE HOSPITAL.—Assistant House Physician. Apartments, board, laundry, and salary as arranged.

CROYDON GENERAL HOSPITAL.—House Surgeon. Salary £200 per annum, with residence, board, and laundry.

DERBY, DERBYSHIRE ROYAL INFIRMARY.—House Physician and Casualty Officer. Salary £200 per annum, with board, residence, &c.

DORCHESTER, DORSET COUNTY COUNCIL.—Temporary Female Assistant Medical Officer of Health. Salary at rate of £300 per annum.

EAST END OF LONDON TUBERCULOSIS DISPENSARY.—Tuberculosis Officer. Salary £500 per annum.

FEDERATED MALAY STATES GOVERNMENT.—Female Medical Officer. Salary £350 per annum, with free quarters. CENTRAL LUNATIC ASYLUM: Assistant Superintendent. Salary £400 per annum, with free quarters.

GRANGE-OVER-SANDS, WESTMORLAND CONSUMPTION SANATORIUM AND HOME, Meathop.—Second Assistant. Salary £200 per annum, with apartments, board, and laundry.

GRAVESEND HOSPITAL.—House Surgeon. Salary at rate of £200 per annum, with board and residence.

HELLINGLY, EAST SUSSEX COUNTY ASYLUM.—Local Tenens Assistant Medical Officer for three weeks. Salary 6 guineas a week, with board, lodging, and washing.

LEEDS PUBLIC DISPENSARY.—Female Resident Medical Officer. Salary £130 per annum, with board, residence, and laundry.

MANCHESTER CHILDREN'S HOSPITAL, Pendlebury.—Two Female Resident Medical Officers, unmarried, for six months. Salary at rate of £100 per annum.

MANCHESTER NORTHERN HOSPITAL FOR WOMEN AND CHILDREN, Park-place, Cheetham Hill-road.—Female House Surgeon. Salary £120 per annum, with apartments and board.

NORTHAMPTON GENERAL HOSPITAL.—House Surgeon. Salary £150 per annum, with apartments, board, washing, and attendance.

PORTSMOUTH WORKHOUSE INFIRMARY, WORKHOUSE, AND CHILDREN'S HOME.—First Assistant Medical Officer. Salary £250 per annum, with apartments, rations, &c.

QUEEN'S HOSPITAL FOR CHILDREN, Hackney-road, Bethnal Green, E.—House Surgeons for six months. Salary £100 per annum, with board, residence, and washing.

ROCHESTER, ST. BARTHOLOMEW'S HOSPITAL, Kent.—Senior Resident House Surgeon. Salary at rate of £300 per annum.

ROYAL WESTMINSTER OPHTHALMIC HOSPITAL, King William-street, West Strand, W.C.—House Surgeon for six months Salary as arranged.

SALISBURY GENERAL INFIRMARY.—House Surgeon and Assistant House Surgeon, unmarried. Salary £150 and £100 per annum respectively, with apartments, board, lodging, and washing.

SHEFFIELD, JESSOP HOSPITAL FOR WOMEN.—Female Junior House Surgeon, unmarried. Salary £80 per annum, with board, residence, and laundry.

SHEFFIELD ROYAL INFIRMARY.—House Physician. Salary £120 per annum, with board and residence.

SOUTHAMPTON FREE EYE HOSPITAL.—House Surgeon. Salary £100 per annum, with board, lodging, and laundry.

VENTNOR, ISLE OF WIGHT, ROYAL NATIONAL HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST.—Assistant Resident Medical Officer.

WEST HAM AND EASTERN GENERAL HOSPITAL, Stratford, E.—House Physician.

Births, Marriages, and Deaths.

BIRTHS.

BALLANCE.—On April 21st, at All Saints' Green, Norwich, the wife of Lieutenant-Colonel H. A. Ballance, R.A.M.C. (T.), of a son.

FULLER.—On April 17th, at Milnthorpe, Westmorland, the wife of W. A. Fuller, M.R.C.S., L.R.C.P. Lond., of a son.

LUMSDEN.—On April 20th, at Lyme Regis, the wife of Dr. H. F. Lumsden, of a daughter.

WINTER.—On April 19th, at John o' Gaunt's House, Lincoln, the wife of Captain E. S. Winter, R.A.M.C. (T.), of a son.

MARRIAGES.

DARLINGTON—BATCHELOR.—On April 20th, at Grange-road Presbyterian Church, Birkenhead, Captain G. Hellyar Darlington, R.A.M.C., to Ida M., elder daughter of Captain J. W. Batchelor and the late Mrs. Batchelor, of Birkenhead.

DAVIES—EDMUNDS.—On April 18th, at Holy Trinity Church, Southport, Dr. Ll. E. Davies, to Mary Constance, daughter of the late Richard Edmunds, J.P., M.R.C.S., L.R.C.P., of Pontnewydd, near Newport, Mon.

DRURY—BROWNSWORD.—On April 19th, at St. Bartholomew-the-Great, London, Alan Nigel Drury, Lieutenant, R.A.M.C., to Daphne Marguerite, elder daughter of Mr. H. A. Brownsword and Mrs. Brownsword, of Rollesby Hall, Norfolk.

DEATHS.

HUMPHRY.—On April 16th, at Marlborough-terrace, Glasgow, Arthur Dumville Humphry, M.R.C.S., L.R.C.P. Lond., aged 49 years.

JAMIESON.—On April 21st, at Charlotte-square, Edinburgh, William Allan Jamieson, M.D. Edin., F.R.C.P. Edin., LL.D., aged 77 years.

N.B.—A fee of 5s. is charged for the Insertion of Notices of Births, Marriages, and Deaths.

BOOKS, ETC., RECEIVED.

BAILLIÈRE, J. B., ET FILS, Paris.
Les Fièvres Paratyphoïdes. Par le Dr. J. Carles, Professeur Agrégé à la Faculté de Médecine de Bordeaux. Price 1.50 fr.

BAILLIÈRE, TINDALL, AND COX, London.
Physiological Chemistry: A Text-book and Manual for Students. By Albert P. Mathews, Ph.D. Price 21s. net.
Orthopedic Surgery. By E. H. Bradford, M.D., and R. W. Lovett, M.D. Fifth edition. Price 15s. net.
The Sex Complex. By W. Blair Bell, B.S., M.D. Lond. Price 12s. 6d. net.
Collected Papers on Analytical Psychology. By C. G. Jung, M.D., LL.D. (formerly of the University of Zürich). Authorised translation edited by Dr. Constance E. Long, Medical Officer, Education Board. Price 12s. 6d. net.

CAMBRIDGE UNIVERSITY PRESS, Cambridge.
Occupations from the Social, Hygienic, and Medical Points of View. By Sir Thomas Oliver, M.A., M.D., D.Sc., F.R.C.P. Price 6s. net. (Cambridge Public Health Series. Edited by Dr. G. S. Graham-Smith and Mr. J. E. Purvis, M.A.)

HARE PHARMACY, 38, Amherst-street, Calcutta.
Hints on Refraction. By S. K. Ganguly, M.B., House Surgeon, Eye Infirmary, Medical College, Calcutta. Price 12 annas.

LONGMANS, GREEN, AND CO., London.
The Involuntary Nervous System. By W. H. Gaskell, M.A., M.D., F.R.S. Price 6s. net.

MACLEHOSE, JAMES, AND SONS, Glasgow.
Bernhardi and Creation: A New Theory of Evolution. By Sir James Crichton-Browne, M.D., D.Sc., LL.D., F.R.S. Price 1s. net.

NATIONAL LEAGUE FOR PHYSICAL EDUCATION AND IMPROVEMENT, London.
Mothercraft. Parts I. and II. Second edition, revised and enlarged. Price 4s. 6d. net.

PUTNAM, G. P., SONS, London and New York.
Mosquito Control in Panama. The Eradication of Malaria and Yellow Fever in Cuba and Panama. By Joseph A. Le Prince, C.E., A.M., Chief Sanitary Inspector, Isthmian Canal Commission, 1904–1914; and A. J. Orenstein, M.D., Assistant Chief Sanitary Inspector, Isthmian Canal Commission. With an Introduction by L. O. Howard, Ph.D., LL.D., Entomologist and Chief, Bureau of Entomology, United States Department of Agriculture. Price 10s. 6d. net.

UNWIN, T. FISHER, AND BALE, SONS, AND DANIELSSON, London.
Defective Children. Edited by T. N. Kelynack, M.D. Price 7s. 6d. net.

WRIGHT, JOHN, AND SONS, Bristol.
On Modern Methods of Treating Fractures. By Ernest W. Hey Groves, M.S., M.D., B.Sc. Lond., F.R.C.S. Eng. Price 7s. 6d. net.

Notes, Short Comments, and Answers to Correspondents.

AN ANCIENT TEXT BEARING ON VENEREAL DISEASE.

AMONG the thousands of Assyrian and Babylonian cuneiform written tablets translated many allude to disease. Their medical matter arises from their being incantations against various maladies and instructions in magical methods of cure. Many texts contain prayers for the prevention or mitigation of disease, whilst some narratives closely allied to the story of Job present a list of all known ailments. Complete as the list of Mesopotamian maladies has been made, no indication of venereal disease, and certainly no enumeration of symptoms allied to, or identical with, syphilis has been detected. A recently deciphered text, however, may indicate the prevalence of such cases. In a cuneiform tablet, No. VIII., of a series of magical formulæ and prayers known as the "Surpu Texts," a list is given of four grades of hierophants, or priestesses. The title of one series is read as SAL-NU-GIG, and Assyriologists have no doubt as to the meaning being: "Woman: not: sick"; also that it is equivalent to the Hebrew word of qadistu, a person dedicated to service in a sanctuary. Now these women, of which four grades are specified, were dedicated to the service of Ishtar (Mylitta) in temples of that deity, the three other grades being the high priestess and two classes of temple maidens, or nuns, who it is almost certain were virgins. The Sal-nu-gig, or females in good health, for the works or service of Ishtar (Ashtarte), the licentious goddess of the Semitic race, doubtless specifies the class of women spoken of by Herodotus, who in the temples of Mylitta in Babylon surrendered themselves to the embraces of male visitors to the shrines as a regular part of the temple ritual. That their title should be practically a certificate of freedom from disease may indirectly show that venereal complaints were known. Also, the many fragments we possess of "The Story of Ishtar," a goddess like Venus, who freely bestowed her charms, show that on occasion the acceptance of her advances proved very evil, and even fatal to her admirers. One of these, a shepherd named Ishullum, in the part of Ishtar's mythological story concerning her adventures with him, remonstrates with the fickle goddess in the following terms:—

> Me—what dost thou desire of me?
> Hath not my mother baked, have I not eaten,
> That I should eat loathsome and burning fare?

It may be that the title Sal-nu-gig only refers to freedom from functional, periodic disorders, or malformations of certain organs, but it seems rather too emphatic to mean merely this. It is to be hoped that further light will be thrown upon the subject by the finding of other texts.

NOTIFICATION FEES AND THE CERTIFICATE QUESTION.

To the Editor of THE LANCET.

SIR,—Referring to the communication which appeared in your issue of April 15th (p. 847), there is one aspect of this question which is of great importance, and that is the serious effect the reduction of the notification fee may have on the early notification of cases of pulmonary tuberculosis. Even with the present fee it is difficult to obtain early notification. Every medical officer of health knows from experience how many cases are not notified until late in the illness, and sometimes only when death is imminent, or has occurred. Instead, therefore, of reducing the fee, public policy calls for an increased fee so far as pulmonary tuberculosis is concerned, and suggests that the fee—say of 5*s.* at least—should be given for early *diagnosis* and not merely for notification. It would be fairly easy to make adequate provision to prevent abuse of such a measure, which is the only objection likely to be taken to it.—I am, Sir, yours faithfully,

Hartlepool, April 24th, 1916. GEORGE JUBB.

THE CAYMAN ISLANDS: A HEALTHY DEPENDENCY.

THE Blue-book of the Cayman Islands for 1914–15 has just been received at the Colonial Office. The islands in question—Grand Cayman, Cayman Brac, and Little Cayman, with a total area of 225 square miles—form a dependency of Jamaica, administered by a Commissioner, assisted by the "Justices and Vestry." In June, 1911, a census was taken, showing a total population of 5564—2322 white, 2211 coloured, and 1031 black. In 1915 there were 171 births, and the death-rate was 8 per 1000. The Commissioner describes the islands as "among the healthiest places in the world. There are no cases of illness attributable to climatic conditions. The weather is warm for the greater part of the year. The prevailing breeze is from the south-east from April until October, when the cool season begins, with a change of wind to the north and north-west in the early part of November. The average temperature in the hot months is 83° F. (morning), 89° (midday), and 86° (evening), and in the cool months 71°, 80°, and 74°." The report of the Government medical officer contains the following passages: "Acute tonsillitis has been frequent. ..... Indigestion and dyspepsia are widespread and attack all ages, even those of tender years. It is due to the excessive consumption of a carbohydrate or starchy diet in the form of the cassava and sweet potato. It being impossible to eliminate these from the every-day dietary, I have advised the people to boil their cassava longer, also to eat it younger, and to use the sweet potato boiled instead of roasted. ..... Eight cases of typhoid fever occurred during the year; all were of a mild type with the exception of one case which proved fatal. ..... Six cases of pulmonary tuberculosis or consumption have come under my notice, three of which were far advanced and have since died. There are, however, many other early cases. Here the smoke-fire question is an important one. The irritating nature of the smoke tends to aggravate the persistent cough so often present and is most injurious. Equally so is this the case in the disease known as bronchial asthma, cases of which are quite as numerous as digestive troubles. ..... Fish-poisoning requires mention. Eighteen cases have, to my knowledge, occurred in the past seven months. The period of incubation varies from 12 to 48 hours, and the onset in each case was sudden. The symptoms and duration are what one meets with in a typical case of ptomaine poisoning, and the illness is treated by me as such with most satisfactory results. The opinion held locally is that all fish caught inside the reef are poisonous. This I do not agree with, as I have reliable information to disprove it. Baracoota, goat-fish, and jack are the fish most commonly believed to be poisonous. In all seven of the cases at which I had the opportunity of being present, I obtained a definite history pointing to the baracoota being the source of infection; in my opinion it is probably due to a toxin developed in the liver of the fish and akin to that found in certain forms of shell-fish. ..... There is yet another type of fever found all over the island and known locally as five-day fever. This, in my opinion, is a mild form of relapsing fever transmitted by ticks. ..... On the whole the health of the islands is good."

THERAPY OF WHOOPING-COUGH.

To the Editor of THE LANCET.

SIR,—As you have remarked of whooping-cough in England in the annotation in THE LANCET of Jan. 29th, so it might be said of it in South Africa, "the disease is always with us," in European as well as native. In the European it is a milder affection than at home, while in the native it is a severer disease and often complicated by bronchitis and pneumonia. Viewing whooping-cough as a whole, it cannot be said that Dr. Benstz's array of drugs to which you refer quite accord with the modern principles of therapy. The toxic symptoms—e.g., sopor, puffed face, vomiting, want of appetite—would seem to contra-indicate codeine, morphia, bromide, &c. Here, as in other general infections, a general internal antiseptic is indicated. Up to the present no drug conforms more to this demand than benzol. It is not poisonous, and the manner in which it kills the ova in bilharzia may be accepted as proof of its germicidal power. In bilharzia and whooping-cough it is very soon evident that it destroys toxins. In both conditions toxic symptoms rapidly disappear, pallor disappears, appetite returns, and weakness and lethargy diminish.

In whooping-cough, no matter how severe the case, during the first 24 hours under the drug the attacks become less severe, while after four days' treatment the infection in ordinary cases becomes a negligible quantity except for hygienic observances. Toxic symptoms especially are controlled, natural sleep and appetite return, bronchitis subsides, and a case can often be rescued deep in pneumonia or with cerebral symptoms, complications which do not occur when the drug is used *de novo*. Benzol is the fixing agent in the organo-arsenic compound salvarsan, but judging from its action in bilharzia it must be supposed to have an independent harmful action on bacterial protoplasm. Benzol is an aromatic hydrocarbon and could be synthetised with iodine to produce further efficacy in this and other infectious diseases. It is not readily broken up in the system. It proceeds unchanged through the intestinal canal and is freely excreted through the lungs. Incidentally it may be mentioned uric acid is freely excreted under its use, as witness the crystals in the urine while it is being taken. The drug I find is best dispensed in mucilage.

I am, Sir, yours faithfully,

WM. ROBERTSON.

St. Mark's, Cape Province, South Africa, March 6th, 1916.

Tidworth.—The income tax paid in January last was for the year ending April 5th, 1916, and a liability remains for a 20 per cent. addition in July relating to the year ending as above, and not to the present year. The service emoluments will be included in the next return for assessment.

J. F. M.—The explanation probably is that by the particular method adopted in making the beverage a greater quantity of the oils was extracted. These have marked stimulating effects. There could be no fermentative change of the sugar, as all yeasts would be destroyed on bringing the fluid to boiling. Yeast is entirely killed at 60° C., and therefore at that point its fermenting power ceases.

Curious.—The note appeared in THE LANCET of Feb. 17th, 1912, p. 444. The drops are said to be made by boiling sulphur with linseed oil or turpentine or both. The small bottle is covered with a piece of parchment, which may be pierced to obtain the preparation in drops. They are taken on sugar. On water they float as dark brown globules of oil. The smell to some people suggests the objectionable one of burnt indiarubber.

F. C.—The surveyor would appear to have followed the usual course in income-tax procedure. It is the custom, where a new owner of a practice is the successor of the previous owner, to assess the new owner, not upon his own profits from the time of the change, but upon the average profits of the last three years of the practice to which he has succeeded. The newcomer will, of course, be entitled to a repayment of some portion of the tax if, at the end of the period of assessment, he finds that the profits have fallen short of the average referred to. The surveyor certainly might allow the financial year to end on Dec. 31st, especially as previously the accounts were made up to this date, and we do not appreciate his objection to this course.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Tuesday, May 2nd.

SURGERY: SUB-SECTION OF ORTHOPÆDICS (Hon. Secretaries—A. S. Blundell Bankart, E Rock Carling): at 5 P.M.

Annual General Meeting.—Election of Officers and Council for Session 1916-1917.

PATHOLOGY (Hon. Secretary—Gordon W. Goodhart): at 8.30 P.M.

Annual General Meeting.—Election of Officers and Council for Session 1916-1917.

Communications:

Dr. Andrewes: The Bacteriology of Eleven Cases of Cerebro-Spinal Fever.

Dr. J. A. Murray: A Transplantable Tumour of the Guinea-pig.

Dr. B. H. Spilsbury: Specimens Illustrating Toxic Hepatitis.

Mr. Shattock: (1) Some Points in connexion with the Vermiform Appendix; (2) Some Specimens Illustrating Gunshot.

Wednesday, May 3rd.

SURGERY (Hon. Secretaries—Raymond Johnson, V. Warren Low): at 5.30 P.M.

Annual General Meeting.—Election of Officers and Council for Session 1916-1917.

Thursday, May 4th.

OBSTETRICS AND GYNÆCOLOGY (Hon. Secretaries—Cuthbert Lockyer, H. Russell Andrews): at 8 P.M.

Annual General Meeting.—Election of Officers and Council for Session 1916-1917.

Short Communication:

Dr. Herbert Spencer: A Short Case of Primary Carcinoma of the Fallopian Tube.

Specimens:

Dr. Russell Andrews: Primary Carcinoma of the Fallopian Tube.

Dr. Cuthbert Lockyer: Early Tubal Carcinoma arising in the Displaced Epithelium of Nodular Salpingitis.

Papers:

Dr. Henry Briggs: Unilateral Solid Primary Adenoma of the Ovary.

Mr. John D. Malcolm: Second Case of Pneumo-peritoneum; Release of Gas; Recovery.

Friday, May 5th.

LARYNGOLOGY (Hon. Secretaries—Cecil I. Graham, Frank A. Rose): at 5 P.M.

Annual General Meeting.—Election of Officers and Council for Session 1916-1917.

Discussion.

ASSURANCE MEDICAL SOCIETY AND MEDICO-LEGAL SOCIETY (CONJOINT MEETING), House of the Royal Society of Medicine, 1, Wimpole street, W.

WEDNESDAY.—5.30 P.M., Paper:—Sir John Collie: The Effects of Recent Legislation upon Sickness and Accident Claims.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY, West London Hospital, Hammersmith-road, W.

FRIDAY.—8.30 P.M., Meeting.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.

Course of Lectures on the Anatomy of the Human Body, for First-aid and Ambulance Students (open to all members of ambulance companies and first-aid classes):—

WEDNESDAY AND FRIDAY.—5.30 P.M., Prof. A. Keith. 4 P.M. to 7 P.M., Exhibition of Anatomical Preparations and Specimens in the Theatre on lecture days, and between 10 A.M. and 5 P.M. in the Hall of the Museum on the following day.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye. Dr. Simson: Diseases of Women.

TUESDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Addison: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations. Dr. Simson: Diseases of Women.

THURSDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye.

FRIDAY.—10 A.M., Dr. Simson: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Addison: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Eye Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY.—Clinics:—10.30 A.M., Surgical Out-patients (Mr. B. Gillespie). 2.30 P.M., Medical Out-patients (Dr. T. R. Whipham); Gynæcological Out-patients (Dr. Banister). 3 P.M., Medical In-patients (Dr. R. M. Leslie).

TUESDAY.—2.30 P.M., Surgical Operations (Mr. Carson). Clinics:—Medical Out-patients (Dr. A. G. Auld); Surgical Out-patients (Mr. Howell Evans); Nose, Throat, and Ear Out-patients (Mr. C. H. Hayton). Radiography (Dr. Metcalfe). 3.30 P.M., Medical In-patients (Dr. A. J. Whiting).

WEDNESDAY.—Clinics:—2.30 P.M., Throat Operations (Mr. C. H. Hayton). Children Out-patients (Dr. T. R. Whipham); Eye Out-patients (Mr. R. P. Brooks); Skin Out-patients (Dr. H. W. Barber). 5.30 P.M., Eye Operations (Mr. R. P. Brooks).

THURSDAY.—2.30 P.M., Gynæcological Operations (Dr. A. E. Giles). Clinics:—Medical Out-patients (Dr. A. J. Whiting); Surgical Out-patients (Mr. Carson); Radiography (Dr. Metcalfe). 3 P.M., Medical In-patients (Dr. R. M. Leslie).

FRIDAY.—2.30 P.M., Surgical Operations (Mr. Howell Evans). Clinics:—Medical Out-patients (Dr. A. G. Auld); Surgical Out-patients (Mr. B. Gillespie); Eye Out-patients (Mr. R. P. Brooks).

THE THROAT HOSPITAL, Golden-square, W.

MONDAY.—5.15 P.M., Special Demonstration of Selected Cases.

THURSDAY.—5.15 P.M., Clinical Lecture.

For further particulars of the above Lectures, &c., see Advertisement Pages.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, April 26th, 1916.

Date.	Barometer reduced to Sea Level and 32° F	Direction of Wind.	Rainfall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
April 20	29·240	W.		87	55	42	42	43	Overcast
" 21	29·480	S.E.	0·10	75	59	36	39	42	Cloudy
" 22	29·450	N.	...	103	52	41	41	44	Overcast
" 23	29·950	S.W.	...	95	57	44	45	49	Cloudy
" 24	30·120	S.W.	...	90	57	43	46	48	Cloudy
" 25	30·184	S.W.	...	109	67	45	52	46	Fine
" 26	30·140	S.E.	...	108	73	50	52	57	Fine

The following magazines, journals, &c., have been received:—British Journal of Dental Science, London Hospital Gazette, Guy's Hospital Gazette, St. Mary's Hospital Gazette, Magazine of the London (Royal Free Hospital) School of Medicine for Women, Medico-Legal Journal, Annales de Médecine, Archives de Médecine et de Pharmacie Militaires, Proctologist and Gastroenterologist, Journal of Surgery, Medical Times, Revista Medica del Uruguay, New York Medical Times, Malaria e Malattie del Paesi Caldi, British Dental Journal, Quarterly Journal of Microscopical Science, Medical Chronicle, Bulletin de l'Office International d'Hygiène Publique, Medical Officer.

EDITORIAL NOTICES.

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITOR," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention should be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, *and when accompanied by blocks it is requested that the name of the author, and if possible of the article, should be written on the blocks to facilitate identification.*

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

We cannot prescribe or recommend practitioners.

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

Letters relating to the publication, sale, and advertising departments of THE LANCET should be addressed "To the Manager."

We cannot undertake to return MSS. not used.

MANAGER'S NOTICES.

ALTERATION OF INLAND SUBSCRIPTION RATES.

OWING to the alteration in the Inland Newspaper Postal rate, the postage on each copy of THE LANCET will in future be 1*d.*, and sometimes 1½*d.*

The revised Inland Subscription rates are:—

One Year	£1 3 3
Six Months	0 13 8
Three Months	0 7 0

The rates for the Colonies and Abroad (thin paper edition) will be as usual:—

One Year	£1 5 0
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Subscriptions (which may commence at any time) are payable in advance. Cheques and Post Office Orders (crossed "London County and Westminster Bank, Covent Garden Branch") should be made payable to the Manager, Mr. CHARLES GOOD, THE LANCET Offices, 423, Strand, London, W.C.

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Official and General Announcements
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Five lines and under ... ... 4*s.* 0*d.*
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Quarter Page, £1 10*s.* Half a Page, £2 15*s.*
Entire Page, £5 5*s.*
Special terms for Position Pages.

Advertisements (to ensure insertion the same week) should be delivered at the Office not later than Wednesday, accompanied by a remittance.

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B.—Mr. S. N. Babington, Bedford; Dr. Dudley W. Buxton, Lond.; Boot's Pure Drug Co., Nottingham; Sir John Byers, Belfast; Messrs. Bennett Bros., Salisbury; Mr. E. Baker, Birmingham; *Business*, Leeds, Publisher of; Bureau of Science, Manila, Librarian of.

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The Milroy Lectures
ON
INFANTILE MORTALITY AND THE RELATIVE PRACTICAL VALUE OF MEASURES DIRECTED TO ITS PREVENTION.

Delivered before the Royal College of Physicians of London

BY S. G. MOORE, M.D. VICT., D.P.H. ENG. CONJ.,
MEDICAL OFFICER OF HEALTH AND LECTURER IN PUBLIC HYGIENE AND SANITATION, TECHNICAL COLLEGE, COUNTY BOROUGH OF HUDDERSFIELD.

LECTURE III.[1]

Delivered on March 16th.

THE RELATIVE PRACTICAL VALUE OF MEASURES AGAINST INFANT MORTALITY.

MR. PRESIDENT AND GENTLEMEN,—When one is faced with the task of framing an estimate of values which involves comparisons, it is desirable to establish a basis, or criterion, if any practical result is to be attained. Happily for our present purpose we have such a standard in the work of M. Morel de Villiers. I will proceed to give an account thereof.

THE WORK OF MOREL DE VILLIERS AT VILLIERS-LE-DUC.

During my early inquiries into the subject I saw a statement in a medical paper to the effect that at Villiers-le-Duc, a Commune of the French Midi, the infant mortality figure had been zero for ten years. I did not believe the statement. It was incredible. Yet I wrote to the French Academy of Medicine and inquired if they had any information on the subject. With the customary courtesy of our neighbours and gallant Allies, the Academy sent me a very full and complete answer confirming the fact, not merely by affirmation, but also by means of a print of a report to the Academy made by a special Commissioner, with the additional facts that during the same period no mother had died in child-bed, and at the date of the report all were *vivant et vigoureux*. Apparently the French Academy of Medicine had felt some difficulty in accepting so startling and important a statement.

So far as I am aware no translation of this report has been published in this country, except in my Report on Infant Mortality to the Huddersfield Sanitary Authority, the fourth edition of which is now out of print. There it is set forth in detail. It was my intention originally to embody it completely in these lectures, but because of the restriction imposed by time, and because it goes into great detail I will not do so. The actual regulations which achieved so perfect a result, however, must be set forth, and I will add certain of the more outstanding comments of the reporter, both translated into English:—

Regulations.

The Mayor of Villiers-le-Duc, considering that the municipal authorities have the duty of endeavouring to stop the depopulation of the country by taking the measures necessary to prevent birth mortality and any child being stillborn, and to do away with infantile mortality, the municipal council orders as follows:—

Article I.—Every woman with child, whether married or not, having her home in the village, and not in possession of sufficient means to allow her to take upon herself the expense of the measures necessary to secure, as far as possible, not only her own life, but also that of the child about to be born, shall have the right to require the help of the village authority.

Article II.—In order to take advantage of this favour she must declare her condition at the office of the Mayor, before the seventh month, and she shall at the same time indicate by what midwife she wishes to be attended. The midwife named shall be requested by the official head of the village to visit the woman with child in order to ascertain for herself that there is present neither albuminuria nor dystocia either of the child or of the mother, nor dangerous presentation. For this visit there shall be allowed to the midwife a sum of (5 francs) 4*s*. 2*d*. out of the fund opened in the village for free medical aid, and without any share of liability on the State or on the department.

Article III.—In case the midwife, after this examination, shall consider that it is necessary to call in a medical man, she must at once notify the municipal authority without giving the reason for the notice. The authority shall then request a medical man, at the choice of the woman with child, to take the measures necessary to bring about the confinement successfully. The fees of the medical man shall be secured on the credit of the free medical aid fund without any liability on the State or department.

Article IV.—Every woman who is assisted by the Commune at her confinement shall receive a grant of 10*d*. per day during six days (not counting the day of her confinement) if she remains in bed. This grant shall be paid to her at the end of six days. If the woman gets up before the time fixed the grant shall be refused. The cost of this shall be defrayed from the free medical aid fund without liability on the State or the department.

Article V.—Every woman who takes in a child to nurse, if she does not feed it at the breast, or if she feeds it partly at the breast and partly otherwise, shall be bound to provide herself with an apparatus to sterilise the milk, and shall follow out, for the feeding of the child, the written instructions which will be supplied to her by the municipality. She shall, on every occasion, when required by the municipality or by the visiting doctors, produce the sterilising apparatus, the feeding bottles, full or empty, the teats, and other accessories, in such a way that it will be possible to ascertain that they are in good condition.

Article VI.—All the infants placed out to nurse shall be weighed every fortnight on the communal baby-weighing machine either at the office of the Commune, if time permit, or at the home of the child. The increase of weight shall be noted on a slip kept separately for each child, and preserved at the office of the Commune

Article VII.—Every nurse-child brought up at the breast or on the bottle who may be attacked by any illness, especially by diarrhœa, vomiting, or respiratory troubles, must be notified to the municipality with a maximum delay of not more than 24 hours from the first appearance of the illness.

Article VIII.—In case nurses who have charge of the infants do not conform to the regulations in Articles 5, 6, and 7 above given, the certificate notifying their qualifications may be withdrawn from them eight days after the notification has been received without effect.

Article IX.—An apparatus for sterilising milk and exchangeable parts of the apparatus shall be placed at the office of the authority for disposal to the nurses, who may purchase them at a reduced price. The mothers who nurse their own children, and who are known to be in a state of poverty, shall be able to obtain on loan, without charge, a sterilising apparatus which they shall return to the office after the weaning of the child.

Article X.—Every nurse bringing up her own child, or a child entrusted to her, whether at the breast or by bottle, who shall produce the child in a good state of health at the age of one year, shall have the right to a grant of 2*s*. per month dating from the time when the child was begun to be nursed by her, up to the time when the child shall have reached the age of one year.

Ordered at Villiers-le-Duc.

THE MAYOR DE VILLIERS.

Report of Special Commissioner to French Academy of Medicine.

Wishing to have incontestable official documents, I wrote to M. Morel de Villiers, to ask him a certain number of questions for information. On Feb. 12th I received the following letters:—

DEAR PROFESSOR,—I have the honour to forward to you the documents you have asked me to send. The information which they contain is strictly accurate. It has been taken from our official records, and the records contained in the Archives of the Commune of Villiers-le-Duc. In accordance with your instructions, I have set out by our Mayoral Secretary (who is our schoolmaster) a table of the infantile mortality from birth to one year old in Villiers-le-Duc during a century from 1804 to 1903.

MOREL DE VILLIERS.

This table proves not only the truth of the assertions contained in the note of M. Morel de Villiers, but also that the real effects are even better than the results published. In fact the maximum and the minimum rates of infantile mortality as stated in the note are for the first nine decennial periods from 28 per 100 to 13 per 100, whereas in reality they are from 30 per 100 to 15 per 100. As for the infantile mortality during the last decennial period (1893 to 1903) it is simply zero.

In a careful reading of the figures contained in this table it is easy to make one note that is exceedingly interesting. There is shown, in fact, a sudden fall in the percentage of mortality from 1854 to 1863. Whilst up to that time the percentage has been almost regular since the beginning to the century (20·9, 22, 26·9, 25·6, 23·4), it falls all at once of 15 per 100 from 1854 to 1863.

[1] Lectures I. and II. were published in THE LANCET of April 22nd (p. 849) and 29th (p. 895), 1916, respectively.

The cause of this diminution of infantile mortality does not seem to me in any way a matter of doubt, and I entirely agree with the opinion of M. Morel de Villiers, who tells me: "I attribute this result to the fact that at this time my father was made mayor of the village. He knew nothing whatever of medicine, but he was very much interested in questions of public health. He was interested in children and distributed *layettes* for them, &c." The father of M. Morel de Villiers died in 1866, and his two successors in the mayoralty—excellent in other respects, but having neither his leisure nor his intellectual culture—took no interest in the babies, and then the infantile mortality went up again and soon reached 30 per 100.

In 1884 M. Morel de Villiers, the son, our actual colleague, was appointed mayor. At this time he was not acquainted with the simplest principles of medicine. He said to me, "As an officer I had learnt the art of killing, but not that of healing. I simply applied the principles of my father, and I attained the same results and almost in the same proportions." As a matter of fact, the infantile mortality was 15 per 100 from 1854 to 1863, and was 15·4 per 100 from 1884 to 1893. He studied medicine and took the M.D. for the purpose of this work.

To the table which I have just briefly analysed, M. Morel de Villiers has added another table which is not less interesting, which I ought to make known to the Academy. It is the table of the alterations of the population and of the average length of life during a century (1803 to 1903) in the village of Villiers-le-Duc. In spite of the exceptional importance attaching to the increase in the average duration of life in Villiers-le-Duc since the commencement of the century, and especially from 1884 to 1903 (34 years and 2 months in 1804), (66 years and 6 months in 1903), I confine myself to the subject in hand, and I will only call your attention to a single column of this table, which is concerned with the rate in relation to stillborn children.

This column shows, in fact, that from 1804 to 1878 there were 43 children stillborn, whilst there have been only two from 1878 to 1903. There has only been one child stillborn for 15 years. The death of this child, caused by the want of timely medical assistance, has made our friend take a special precaution. He has ordered the midwives to call in a doctor on every occasion where confinement is not brought to an end within 24 hours. This last measure just completes the admirable work organised by medical assistance at Villiers-le-Duc.

All the facts clearly impress upon us how necessary and essential it is to have the union, *the combined strength of both the officials of the administration and the representatives of the medical profession*. Isolated, their efforts, however good their intentions and wishes, will be fruitless and ineffective, but combined their effects will be all powerful. However, it is not always so, unfortunately.

Essential Features of Foregoing Regulations.

Let us consider what are the essential features of these regulations, which gave a perfect result. 1. They are *orders* to the people concerned to do certain things, and not merely recommendations or advice. 2. *Every* mother with child has the *right* to *adequate* assistance in childbearing. 3. She is required to notify pregnancy. 4. The midwives are *required* to ascertain that the pregnancy is normal, and if it be not so to notify the fact to the authority. For this service the midwife is paid out of public funds. 5. The authority then pays a doctor, *whom the mother chooses*, to take measures to bring about a satisfactory delivery. 6. A continuous supervision of and provision for the infant by the authority. 7. They are complete; they deal with *all* mothers and infants. It is worthy of note that in one of the most democratic countries in the world—a Republic, whose watchwords include "Liberty" and "Equality"—these things are *ordered* to be done. That the orders were obeyed is vouched for by the result.

My propositions in 1904 for the notification of births and of pregnancy were met with surprise. The former with some opposition on the part of the public and (I regret to have to say it) with a great deal on the part of medical men, while the latter seemed so ridiculous to the authorities that I quite failed to obtain for it any serious consideration. To-day, even this "ridiculous thing" lies within the "region of practical politics," and the notification of births is universal and compulsory throughout England and Wales.

Considerations based on these facts encourage me in setting forth the relative importance of work against infant and maternal mortality to take Morel de Villiers's regulations as a standard and compare various other "œuvres" with them. Their success appears to warrant the statement that they are the best standards extant; more than that, they approach perfection if we may judge by results. And what better criterion?

It is to be borne in mind that Villiers-le-Duc is a small place, the life there is that of a simple rural village, that the numbers concerned are small, and that the conditions in large urban communities are different; that these present degradation of living, drunkenness and other forms of vice, degrees of poverty, and so forth, which must preclude the hope of similar results, however effectively the measures of de Villiers may be applied. When we remember that the infant mortality figure for the children of medical men is 40 in this country, it at once becomes manifest that there are factors in the problem which make it clear that the results at Villiers-le-Duc are not within our reach.

Yet, on the other hand, let us not flinch from giving them their due weight. Let us not flinch from facing and attempting to overcome difficulties from whatever cause arising. We know that ignorance stands in the way. We can dissipate that. Apathy will disappear once it be realised that there is a stark need in the interest of the British race for the conservation of infant life. Vested interests present a more formidable obstacle, but by enlightenment of the general public and steady, tactful, diplomatic pressure this may be largely removed. Suspicion and jealousy need only to be met with frankness and friendliness to be won to the side of the good work.

When it was established that there had not been any exaggeration in the statement "that for the space of ten years no infant born at Villiers-le-Duc had died," the methods of the mayor of that commune received very careful scrutiny and consideration, of course. But among the many excellent—in fact, one is almost constrained to say perfect—recommendations there was one, which although I caused it to be printed in capitals in my report, did not reach its full signification in my mind until quite recently. It is contained in the closing words of the report to the French Academy of Medicine. They are worthy of reproduction:—

All the facts clearly impress upon us how necessary and essential it is to have the union, *the combined strength of both the officials of the administration and the representatives of the medical profession*. Isolated, their efforts, however good their intentions and wishes, will be fruitless and ineffective, but combined their efforts will be all-powerful. However, it is not always so, unfortunately.

The fact stated is so obvious that the tendency is to take it for granted, yet too much importance cannot be attached to the plain obvious necessity of obtaining, if it be at all possible to do so, the cordial and active coöperation of the family doctor with the public authorities in this work. Unfortunately the Notification of Births Act came at a time when the medical profession was not without just and proper cause of complaint. It were as unwise as unhappy to revive the unpleasantness, but every medical man will be able to think of one or more actions of the Government in respect of which the medical profession considered that it had reason to feel aggrieved. I believe that it was the result of this state of affairs rather than by reason of any intrinsic characteristics of the Notification of Births clause which led to an unfavourable reception thereof by many of our representatives. Be that as it may, I am happy to be able to say that there has not been any friction in the matter at Huddersfield. Certain medical gentlemen approved of the Act and notified births; others did not approve of the Act and did not notify births.

NOTIFICATION OF BIRTHS IN HUDDERSFIELD.

I will now exhibit a slide or two which will show the progress of the notification of births in Huddersfield, and also by whom these notifications have been made. (Tables I. and II.) These results were reported month by month to the sanitary authority, and, of course, they were regarded with very great satisfaction. There has never arisen a single case where a prosecution under the Notification of Births clause has even been in contemplation. The onus of notifying falls in the first place on the father of the child. It is to him we look, and from him we require an explanation in the event of omission. We found no antagonism whatever. The omissions result either from oversight, lack of knowledge of the requirements of the Act, or misunderstanding as to who was to forward the notification.

I have given some little prominence to this aspect of the work in Huddersfield, because I perceive with very great regret action on the part of certain associations, which I regard as mistaken. The work against infant mortality in Huddersfield has been the means of causing many more

people to consult the doctor than was the case prior to its inception. Furthermore, the importance of the newly born infant has been greatly increased in the public mind, with

TABLE I.—*Births Notified Compared with Births Registered in Huddersfield.*

Month.	Births in 1914—		Per cent.	Month.	Births in 1915—		Per cent.
	Registered.	Notified			Registered.	Notified	
January	149	144	97	January	157	149	95
February	138	130	94	February	163	156	96
March ...	217	208	96	March ...	208	202	97
April ...	161	157	98	April ...	191	178	93
May ...	176	169	96	May ...	150	146	97
June ...	196	189	97	June ...	179	171	95
July ...	165	157	95	July ...	144	137	95
August ...	184	179	97	August ...	129	126	98
September	187	174	93	September	173	169	98
October ...	139	135	97	October...	128	119	93
November	133	129	97	November	132	129	98
December	186	174	94	December	186	178	96
Total ...	2030	1945	96	Total ...	1940	1860	96

TABLE II.—*Classification of Persons Notifying Births in Huddersfield.*

Period.	Total notifications.	By doctors.		By midwives.		By parents and relatives.		By others.	
		No.	%	No.	%	No.	%	No.	%
Oct.-Dec., 1905 ...	144	3	2·08	102	70·83	6	4·17	33	22·92
Jan.-March, 1906 ...	214	6	2·80	123	57·48	19	8·88	66	30·84
April-June, ,, ...	226	4	1·77	125	55·31	26	11·50	71	31·42
July-Oct., ,, ...	377	10	2·65	199	52·79	69	18·30	99	26·26
Compulsory Notification commenced Nov. 1st, 1906.									
Nov.-Dec., 1906 ...	336	70	20·83	115	34·23	119	35·42	32	9·52
Jan.-June, 1907 ...	1042	216	20·73	351	33 68	348	33·40	127	12·19
July-Dec , ,, ...	1060	219	20·66	395	37·27	335	31·60	111	10·47
Jan.-June, 1908 ...	1104	190	17 21	436	39 49	359	32·52	119	10·78
July-Dec., ,, ...	1054	198	18·79	402	38·14	334	31·69	120	11·38
Jan.-June, 1909 ...	1133	214	18·89	444	39·19	337	29·74	138	12·18
July-Dec., ,, ...	1052	203	19 30	407	38·69	327	31·08	115	10·93
Jan.-June, 1910 ...	983	205	20·86	384	39·06	289	29·40	105	10·68
July-Dec., ,, ...	1039	217	21·07	390	37·86	321	31·17	102	9·90
Jan.-June, 1911 ...	1048	214	20·42	382	36·45	294	28·05	158	15·08
July-Dec., ,, ...	899	133	14·80	364	40·49	301	33 48	101	11·23
Jan.-June, 1912 ...	938	103	10·75	344	35·91	413	43·11	98	10·23
July-Dec., ,, ...	965	68	7·05	409	42 38	408	42·28	80	8·29
Jan.-June, 1913 ...	1055	108	10·23	461	43·70	426	40 38	60	5·69
July-Dec., ,, ...	989	116	11·73	473	47 83	351	35·49	49	4·95
Jan.-June, 1914 ...	1040	98	9 42	515	49 52	388	37·31	39	3·75
July-Dec., ,, ...	929	93	10·01	402	43·27	380	40·91	54	5 81
Jan.-June, 1915 ...	1008	110	10·91	441	43·75	379	37·60	78	7·74
July-Dec., ,, ...	874	126	14·42	438	50·11	226	25·86	84	9·61

the consequence that the mother and those who are associated with her and help her, share in her added dignity and importance—with satisfactory results in every direction.

INCOMPLETENESS OF PRESENT MEASURES.

We are now in a position to consider how far the measures in operation in this country, and which have already achieved a satisfactory measure of success, coincide with or diverge from the Morel de Villiers regulations. Unhappily there is but one coincidence, and the rest are divergences. The people are required to notify births. All the rest is more or less voluntary.

It is not established in this country that every mother has the right to adequate assistance in child-birth. It is true that there is the workhouse, but one need but name the association—I mean pauperism—to cause its exclusion from consideration in the minds of all who understand social life in England to-day. The resources of the Poor-law are not truly and willingly accorded as a right, but are yielded grudgingly and under degrading conditions. Neither midwives nor doctors have the duty explicitly laid upon them to ascertain that the pregnancy is normal, or in the presence of abnormality to notify the facts to anyone. An outstanding feature of the work of M. de Villiers is its completeness. From beginning to end, no distinction is made between one woman and another. It is not a question of married or not married, it is not a question of poverty or of riches. The welfare of the mother and her child is the sole consideration. This is as it should be.

When the Huddersfield sanitary authority commenced to work in this field, it was suggested that provision need only be made for visits to the babies born in the poorer districts, but after consideration provision was made for visiting every baby born in the borough. The wisdom of this decision soon was justified. The assistant medical officers entrusted with the visitation of the mothers and babies immediately after birth were given a discretion. They were allowed to omit visits if they thought fit. (I may mention incidentally that they were instructed to behave exactly as they would in social life, not to enter a house—any house, however humble—without an invitation, not to seat themselves unless bidden to do so, and so forth.) Embarking on this work they acted diffidently, as was natural. The result was that I received complaints, not that they had visited unduly or improperly, but asking: "Why was not my baby visited?" "How is it since a visit was paid by the lady doctor to Mrs. ——'s baby, that she did not visit mine?" I think it is plain that assistance in these matters should be tendered to all, without distinction, and where it is declined it should not be pressed. Provided, of course, that there is reason to believe that the mother is already furnished with adequate assistance in her need.

The work in this country is not in any sense complete. We have seen that about one-sixth of the babies born in this country year by year are dealt with by more or less voluntary associations, each working along its own lines, all doing excellent work, but without adequate, direct, authoritative guidance from the Government. Most significant of all is the fact that until quite recently no notice was taken of an unborn baby—none whatever. We do not even know how many have died prior to birth; we do not even yet know that essential fact from official records, although a careful estimate, made by a Fellow of this College—Dr. Amand Routh—gives the number at 100,000 per annum.

It appears to be quite a common-place, common-sense thing that the State should concern itself with the welfare of the mothers of the race. It does not seem to me to be a very singular or extraordinary project that when a woman is about to become a mother the authorities should take notice of the fact, with a view of helping her and with a view of ensuring that when her time of trial comes she shall have adequate assistance; that endeavours should be made beforehand to ascertain that all is well and to take what measures may be to remove dangers. Let me give an example showing the need for such help. I have recently established a system for the voluntary notification of pregnancy. Recently I received a notification of a woman in respect of whom the following report was submitted:—

Earliest anticipated date of confinement: March 15th, 1916.
Children: First healthy, second healthy. No miscarriages.
Present condition: Marked œdema of feet and legs; headache for past fortnight. Vision defective lately and occasional dizziness. Vomiting has been troublesome; palpitation frequently. (Eighteen months ago was under medical care for kidney trouble.)
Action taken: Advised to call in doctor and have help in the house at once. Danger of condition pointed out. Dr. E—— will be called in at once.
Condition of house: Clean, well lighted. To be revisited.
Revisited: 10th, 11th, 16th.
Report: Under doctor; much better.

Here is an example of what has been going on and still is going on. This woman, a wife, a mother of two young children, about to become the mother of a third, engages the services of a midwife. She is in imminent peril of her life. She does not know that to be the case. She regards the above symptoms as being inevitable to her condition. The midwife does not recognise the danger. How could she? She is not trained to do so. Medical training and

knowledge is needed for that. In the absence of the notification to the medical officer of health it is not too much to say that in all human probability the woman's life, and probably that of her baby also, would have been sacrificed. To-day there is every reasonable prospect that at least her confinement will be normal and she may live for years. Furthermore, there is no reason why the infant should not come into the world normally.[2]

I have heard the statement—in fact, it was made by a personage holding "high office"—that the notification of pregnancy is not to be thought of; that it would violate the privacy of family life and interfere with one of the holiest functions of humanity. With all respect, I affirm that only absence of information, nothing but lack of insight, can permit anyone to entertain such views. I can well imagine a medieval monk giving utterance, with much unction, to such ideas. In the days when all human afflictions were ascribed to the will of a benevolent deity, before knowledge had enabled men to serve themselves of natural resources, such ideas, opinions, and sentiments were normal and up to date, but surely they will not survive to-day! I have heard of objections from the professional point of view. But objection from this source can only be based on misconception. In every case, so far as Huddersfield is concerned at least, every condition calling for medical treatment will be referred to the family doctor.

It may be and probably will be claimed, and it certainly ought to be the case that the claim might be made with strict propriety, that where a woman has engaged the services of a duly qualified medical practitioner, she does not need any further help. I cannot speak to-day with any definite opinion, but some years ago I know that it was not the practice of the family doctor when engaged for a confinement to make any systematic precise effort to satisfy himself that his patient was normal, and that none of the conditions which from time to time arise and which are so disastrous in their results are present. If it be the case that things are altered nowadays, and that the family doctor does exercise these precautionary functions, then manifestly his patients are not in need of any further assistance; but if the old-fashioned state of affairs persists—and the death returns appear to indicate that this is in fact the case—then, in my judgment, the medical practitioner may very well welcome such aid as can be rendered by a colleague whose function and duty it is to do so, it always being well understood that every case should be referred for treatment to the medical man of the woman's choice.

ANTE-NATAL HYGIENE: PROCEDURE AT HUDDERSFIELD.

The following is an outline of procedure approved and adopted by the Huddersfield Sanitary Authority in the matter of ante-natal hygiene rendered possible by the notification of pregnancy:—

1. (*a*) *Notification of pregnancy* according to the scheme proposed by the medical officer of health in his report to the Health Committee. (*b*) *Visit* by assistant medical officer of health (female), who will consider the case in relation with the following matters.

2. *General.*—(*a*) *Hygiene of the home.*—Size in relation with number in house; light; air. Cleanliness; sanitary accommodation; separate lying-in chamber. (*b*) *Economic.*—Income available in relation to expenditure. (*c*) *Personal.*—Expectant mother and spouse. Healthy—(*a*) hereditarily, (*b*) constitutionally; clean; sober.

3. *Personal.*—(*a*) *Conceptions:* * Abortions—period, cause. Miscarriages—period, cause. Inter-relationship of each. Full term—Alive: Now living, healthy, unhealthy; died, age, cause. Stillborn: Cause. (*b*) *Type of labour:* Normal, difficult, instrumental. Complicated: Local—traumatisms, hæmorrhage, sepsis. General—convulsions, disease. (*c*) *Present health.* (*d*) *Past illnesses.*

* *Causes of abortion:* Cardiac, diabetic, nephritic; traumatic, displacements; abortifacients; lead, alcohol, specific disease.

4. *Examination of expectant mother.*—(*a*) *General:* Heart, lungs, gastro-intestinal, breasts. (*b*) *Abdominal:* Presentation, relationship of head to abdominal parietes (not p.v.). (*c*) *Pelvic measurement:* In case of need. (*d*) *Condition of urine:* Quantity, specific gravity, reaction, albumin, sugar. (*e*) *Investigation of abnormal reactions:* Urine and vaginal.

It would appear that an examination as suggested above will be best conducted at an ante-natal clinic.

5. *Advice.*—(*a*) *Nourishment:* Adequate, digestible, regular. (*b*) *Clothing:* Light, loose, warm, clean. (*c*) *Exercise, rest, sleep.* (*d*) *Personal hygiene:* Physical, mental. (*e*) *Provision for child:* Clothing, cradle.

6. *Assistance.*—(*a*) *Before confinement:* Food, if necessary. Medical advice, if necessary. (*b*) *At confinement:* Medical man or midwife engaged beforehand. Maternity bags, if necessary. (*c*) *Beds in isolation hospital* for cases of puerperal sepsis.

Disorders of Pregnancy.

In each case of abnormality it is proposed to communicate by letter with the general practitioner indicated by the woman, stating the facts and leaving the case to him.

A. *General.*—(1) albuminuria; (2) eclampsia; (3) pernicious vomiting. Refer to own doctor; rest; milk diet.

B. *Reflex disorders.*—(1) Ptyalism; (2) pruritus; (3) mental disturbances—sleeplessness and perversion of appetite. Refer to own doctor.

C. *Abnormal condition of gravid uterus.*—(1) Displacements, backwards, forwards; (2) anteflexion; (3) prolapse. Refer to own doctor. (1) Backward displacement: Refer to own doctor; avoid straining.

D. *Pressure symptoms.*—(1) Œdema—test heart, urine, &c.; (2) varicose veins; (3) hæmorrhoids. Refer to own doctor.

E. *Misplacement of ovum.*—(1) Ectopic gestation; (2) hæmorrhages; (3) miscarriages. Refer to own doctor.

Disorders associated with Pregnancy.

(A) 1. Acute eruptive fevers. 2. Specific diseases—S., T.B., Gon. 3. Cardiac diseases. 4. Renal diseases (nephritis, pyelitis). 5. Hepatic diseases (diabetes, jaundice). 6. Nervous diseases (chorea, insanity). 7. Pelvic diseases (carcinoma, tumours).

(B) Pelvic contractions.

ATTENDANCE AT PARTURITIONS OF MEDICAL MEN AND MIDWIVES.

The numbers of confinements attended by doctors and midwives have a bearing on the notification of pregnancy. Because whatever may be the view adopted as to the desirability or need for additional assistance to pregnant women who have engaged a qualified medical person to ensure a satisfactory delivery in childbirth none will be found to advance the opinion that a midwife has the training and knowledge requisite to recognise the dangers which may arise. In the Supplement to the Forty-fourth Report of the Local Government Board on "Maternal Mortality in connection with Child-bearing" it is shown that in two towns—St. Helens and Cardiff—all the births are attended by midwives, and that in eight others the percentages range from 75 to 83. In other places the percentage falls to 30. Let it be assumed roughly that about one-half of the total confinements in this country are attended by doctors and the other half by midwives.

Another factor should be considered. Since the Midwives Act came into operation there has been a tendency for women to seek the assistance of midwives rather than of the fully trained medical practitioner. (This was an inevitable result of the Act, but this is not the occasion to enter into a consideration of this point.) The experience in Huddersfield in this relation may be of interest. During 1907 21·74 per cent. of the total births were attended by midwives. In 1914 the rate had increased to 55·41 per cent. If this experience (I have not the means to ascertain whether this tendency to prefer the midwife to the doctor has extended to other places) continues, the desirability of securing the safety of the mother by notification of pregnancy becomes more pronounced.

EDUCATION.

It is better to teach the people how to live to-day than to teach them how people lived in ages that are dead. But there are difficulties in the way. At the International Conference on School Hygiene in London, I think it was the second, in the year 1907, after much advocacy of teaching in the above sense the President, the Marquis of Londonderry, explained that the need was recognised, but that teachers were wanting, and I understood him to express the intention of remedying the defect.

Manifestly the best direct method of improving the health of the nation in general, and of preventing the excess infant deaths, is to teach personal, domestic, and communal hygiene to the young. These might with propriety be regarded as essential subjects. I see nothing to prevent them being so dealt with that they would be equally educative as more abstruse and less useful subjects. But the *mortmain* still wields its power. Our educational system comes to us by direct succession from the priesthood. The soul, the mind, the spirit—whatever these things may be—must be regarded

[2] Since the foregoing was written the pregnancy has terminated satisfactorily and the mother and child are well.

—to the detriment of the body, notwithstanding the call for *mens sana in corpore sano*. I learned my "catechism" as a boy. Why not a catechism of health? Surely, if the all-important soul may be trained by question and answer, the less important body may be trained by similar means. The beneficial result on infant lives and on national health would be substantial if every child in the public elementary school were required to learn a simple catechism of hygiene such as any medical man would readily provide.

The promise—or quasi-promise—of the President of the Board of Education remains unfulfilled I believe. It may be that the needs arising out of the present war may lead to a realisation of the advisability of taking effective measures to teach the people how to live to-day. The following words of Herbert Spencer are so apposite that they might have been written à propos:—

If by some strange chance not a vestige of us descended to the remote future save a pile of our school books or some college examination papers, we may imagine how puzzled an antiquary of the period would be on finding in them no sign that the learners were ever likely to be parents. "This must have been the curriculum for the celibates," we may fancy him concluding. "I perceive here an elaborate preparation for many things, especially for reading the books of extinct nations and of co-existing nations (from which it seems clear that these people had very little worth reading in their tongue), but I find no reference whatever to the bringing up of children. They could not have been so absurd as to omit all training for this gravest of responsibilities. Evidently, then, this was the school course of one of their monastic orders."

Is it not an astonishing fact that though on the treatment of offspring depend their lives or deaths, and their moral welfare or ruin, yet not one word of instruction on the subject is ever given to those who by and by will be parents? Is it not monstrous that the fate of a new generation should be left to the chances of unreasoning custom, impulse, fancy—joined with the suggestions of ignorant nurses and the prejudiced counsel of grandmothers, mitigated as to one-sixth of the total by the efforts of voluntary associations animated by excellent intentions, but lacking the authority, which can only come from the Government?

CONCLUSION.

At the beginning of these lectures I referred to the importance of their subject. I desire that the last issue dealt with may be the same. Let it be that I avoid exaggeration; that I approach the matter with sane judgment, with care, and with accuracy. What is the subject in magnitude? How does it stand in relationship with national life? The number of human beings who are to replace the present farmers, artisans, weavers, bakers, butchers, merchants, shopkeepers, and defenders of their Fatherland, who are given to the nation by the nation's womanhood annually is more than 800,000. During the seven years 1906 to 1912 the number of infants who died was 736,682. So that in seven years all the national recruits of one year may be said to be obliterated, or nearly so.

That seems to be an important matter. But were these deaths inevitable? Let us consider. Let us try to answer clearly and in a manner which admits of no doubt. These infants died at the rate of 115 per 1000 births. In Norway, Sweden, New Zealand, Australia, in whole agricultural counties here in England, and in the better wards of our large towns, the rate falls below 80 per 1000. Furthermore, and I desire to give due prominence to this fact, in the better families among even the worst districts, the rate is equally low. But what is the very minimum fatality among infants? Morel de Villiers has answered "Zero." But among larger communities under the conditions of town life? Doctor's babies 40 per 1000, and almost all the professional classes under 50. But there can be no exact reply. Let me, therefore, err on the side of moderation, and assume that among these 736,682 babies who died between 1906 and 1912 all who were in excess of the rate of 80 per 1000 might have been saved. How many? The answer is 224,206.

Be it recognised I pray, that here is no trivial loss. The figure is substantial! Is it not so? But as a matter of fact, apart from sentiment, theory or desirability, can anything be done? Let one of your Fellows—Dr. Newsholme—answer. In his second report on the subject, folio 2, he states that the improved conditions have implied a saving of 185,772 lives in seven years, comparing 1906–1912 with the preceding seven years. It is easier to reduce a death-rate from 144 to 115 than from 115 to 80. True! But remember these results were obtained by non-coördinated effort—by work partly done by amateurs—and certainly without any special action on the part of the Central Government, without any initiative on its part. It remained to a relatively small provincial sanitary authority to display to the Government of the Nation the need to take steps to enable medical officers of health to become aware of the very existence of human beings who were known to be dying in excessive numbers—excess measured by tens of thousands per annum—from preventable and avoidable causes. Such being the case, what may we not hope when (partly as a result of the consequence of this gigantic and appalling war in which three continents are involved) the powers in Whitehall take hold of the reins and with wide open eyes, receptive mentality, and wise decision deal with the subject comprehensively.

These foregoing figures apply to infants dying after birth. As I have already stated, Dr. Routh gives good reason for the belief that 100,000 per annum die before birth. But surely these are inevitable. Not so! Means for the exact determination of *how many* of them are avoidable are not in existence, but we know that the causes of quite a considerable proportion are removable by skilled medical treatment. Here, again, is a loss of national moment.

Again, more than 3500 women die yearly in England and Wales from conditions resulting from child-bearing. After the numbers we have been considering three and a half thousand do not seem impressive, yet they are worthy of great attention because many result from preventable causes. Not only for themselves are these lives of vital interest to the community, but since each one is of child-bearing age the question arises, "How many more lives are lost to the State in this way?"

So much for the magnitude of the question. Let us turn for a moment to the ethical aspect of the subject. It need but be stated. A civilised country, at this very time engaged in a war against the two greatest military empires of all ages, which it joined because the territory of an ally was invaded and her freedom threatened, cannot permit, not by any possibility, "an army" of her own population to be destroyed annually. An "army," moreover, composed of individuals who, as I have tried to show, hold the right to protection from the State as well as from their parents, an "army" as helpless as innocent.

I have attempted to show (*a*) that the infant holds certain primal rights, as well from the State as from its parents; (*b*) that these rights are not effectively accorded to infants in this country at present; (*c*) that in consequence infants die who should live; (*d*) that the numbers who so die are of substantial magnitude—at least 30,000 per annum; (*e*) that work specially directed to the particular needs of infants has effected a reduction of fatality of more than 26,000 per annum[3]; (*f*) that this special work has been largely spontaneous, unregulated, of unequal efficiency, not applied to the total infant population, and without direct authoritative Government control; and (*g*) that the subject is of national importance.

I have given an account of work which achieved perfect success. This work was characterised by direct control, and engaged in its purview *all* mothers and *all* children both before and after birth. I therefore advocate similar action on the part of the British Government. I urge that the time is long over-passed for the continuance of "muddling through." A system in which, to our shame—not without encouragement and example from authority—we have taken a sort of indolent pride based upon the false and arrogant conception that our resources were so vast, our superiority so great, that *we* could afford to act negligently—to muddle—where it needs all the care, all the resources, all the power of organisation and of schematic, systematised effort on the part of other less favoured races or nations, even to avoid defeat, or disaster, or to obtain some success.

And, finally, I urge that the following things be done, *and done now*, not "after the war": Require the universal notification of pregnancy. Secure for *every* mother adequate provision of the means necessary for a satisfactory termination of her pregnancy. Make provision for and require the supervision of every infant born. Prohibit fraudulent

[3] Second Report on Infant Mortality, Local Government Board, 1912-13, fol. 2.

advertisements which destroy infants. Provide proper education.

I have tried to avoid meretricious appeals. I have endeavoured to pass by vulgar, popular references. It has been in my mind that only valid arguments based on facts and sober judgments are appropriate for submission to this College, in this ancient seat of learning. I have not been unmindful of the responsibility which attaches to the Milroy lectureship. Yet I feel keenly the undeserved pitiful sufferings of infants, and I recognise that sentiment does not commonly go hand-in-hand with pure, calm judgment. If I have been led away from the correct path I am sorry.

We have seen that the birth-rate tends to approximate to the death-rate. Large numbers permanently quit these shores every year. The population will soon be stationary and may decline. None can foresee or foretell the loss, immediate or remote, of the present fathers of the race inevitably resulting from the present great war. Here is no political matter. Here all parties can unite. It is—it must be—the plain immediate duty of every patriot, be he statesman or be he peasant, to do all that lies in his power to protect and foster the sole ultimate source of national strength—the Mother and the Child.

SOME FACTORS IN THE PATHOLOGY OF GAS-GANGRENE.

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(*With Illustrative Plate.*)

GAS-GANGRENE is one of the most interesting diseases that call for attention at the present time. Its occurrence after wounds of apparently trivial nature, its rapid and dramatic development, and, in many cases, its tragic issue, render it a matter of the utmost interest to the surgeon and of importance to the men in the field. And to the pathologist it is of the greatest interest, since it is an example of a disease which would appear to be caused by an organism of the most virulent description, but which, as a matter of fact, is due to one which is, under ordinary circumstances, almost non-pathogenic. The subject is of such interest and importance that I am led to publish the following, which is admittedly incomplete, being little more than a stating of the problem and a suggestion as to future lines of research. I am the less loth to do so in that a recent paper by Kenneth Taylor[1] dealing with the question leads to conclusions that I cannot accept.

Let us first state the question to be solved. A soldier is wounded, perhaps apparently but slightly. He is brought to the field ambulance, where nothing excites any special attention. At the casualty clearing station it is noticed that he looks ill, though he may feel very well. The limb is examined, and it may happen that it is found to be gangrenous already, tense, hard, yielding a peculiar note on percussion. Gas may escape from the wound, and, if so, it has a peculiar and disgusting odour. The patient himself also gives off a characteristic sickening odour, not strong, but repulsive in the extreme, which the sisters recognise as the "death smell." Amputation is performed above the gangrenous part of the limb, in apparently healthy tissues, but the disease reappears in the stump, spreads rapidly, and, perhaps, after another amputation, death follows with symptoms of profound toxæmia. This is one type. Many others occur. Thus the rapidity of the onset varies greatly. I have been informed by two or three good observers, regimental surgeons, that they have seen an abundant formation of gas within the tissues within two hours of the wound; and from a study of the cultural and pathogenic characters of the organism I can well believe it. I have myself seen death occur, with profoundly toxæmic symptoms, within 30 hours. Or the onset of the disease may be delayed long beyond this, and it may develop only at the base, or even in England. When this happens the disease is, I think, decidedly less rapid, less severe, and more amenable to treatment, than that which occurs early. Further, there is a great difference in regard to the amount of gas produced. Some cases, and I think on the whole the worst ones, have no gas in the tissues, or but little. In others there is much gas, under tension, so that the tissues crackle on palpation or when they are incised. Milder cases also occur, mere sloughing of flaps of skin, a single muscle, or piece of one, &c., and the disease remains localised to them, and has no tendency to general spread. Such cases show no toxæmia, or but little.

Looking only at the severe cases we should be led to expect that they were caused by a microbe of the utmost virulence. We might compare them, for example, with the rapid spread and profound toxic effects which occur in severe cases of anthrax or in post-mortem infections from cases of puerperal peritonitis. But we find that they are caused by a bacillus which is almost devoid of pathogenic powers. Let us glance briefly at some of the important features, from this point of view, of the bacillus in question, the B. aerogenes capsulatus, Welch's bacillus, or as it is more commonly and conveniently called nowadays, the bacillus perfringens.

It is an anaerobe, but not a very fastidious one. It will grow quite well in milk, the cream at the top acting as a seal to prevent the access of oxygen, and a pure culture can frequently be obtained by inoculating pus from a wound into sterile milk, boiling it and incubating for 12 or 24 hours. It forms spores, but only on certain media, especially those containing coagulable proteins; hence spores are present in pus. When growing in media containing glucose it forms an enormous amount of gas, but, on the other hand, it forms no spores. Under these circumstances it produces a great amount of organic acid, butyric, &c., and these are inimical to the further life of the bacillus, which dies out if not frequently subcultured. I have found the best medium by far for the cultivation of the bacillus, if rapid and profuse cultures are required, is glucose-broth to which pure chalk, in amount sufficient to form a layer ½ in. deep, is added; access of air is prevented by a layer of paraffin. The tubes are boiled shortly before use to expel any air that may have been absorbed. The purpose of the chalk is, of course, to neutralise any acid that may be produced; this it does very successfully, and if the cultures are shaken from time to time the broth will remain neutral or merely show a slight trace of acidity. In tubes like this growth takes place with extraordinary rapidity; this is a point on which I want to lay especial stress, and very large amounts of gas are given off. Cultures 18 hours old often contain 2000 million bacilli per cubic centimetre, and I have counted over 3000 million per c.c. after 8 hours incubation, the inoculated material being two or three drops of pus, the inoculated tube being boiled to kill all microbes other than spores. In serum, on the other hand, growth is slower, much less gas is produced, and spores are formed.

Let us turn to its pathogenic effects. Rabbits are very slightly susceptible. An injection of 2500 millions intravenously was followed by no appreciable ill-effects. A similar dose under the thin skin of the ear, a region well adapted for observing any slight lesion that might be produced, was equally inert. Guinea-pigs are more susceptible. A massive dose in the peritoneal cavity does not usually affect them, but after about 1000 millions subcutaneously (different cultures differ somewhat in their pathogenicity) there is usually rapid gangrene, followed by death in 24 hours or less.

The bacillus is equally non-pathogenic for man. It is a normal inhabitant of the alimentary canal, causing no harm. It is present at a certain stage in almost all wounds, causing no special pathogenic effects; indeed, I think the prognosis is decidedly better in the case, for example, of a suppurating wound of the knee-joint if this organism *alone* is present, than if a streptococcus or staphylococcus is present either by itself or in conjunction with B. perfringens. Nor are there evidences in these infections of its profoundly toxic effect. A patient (as, for example, one of Captain Fitzmaurice Kelly's, who made an excellent recovery with simple drainage) who has a knee-joint full of pus containing millions of bacilli may be perfectly fit and have a normal temperature. Still more striking are similar cases of hæmothorax, in which the blood in the chest contains these organisms in vast numbers, yet the patient is very fairly well—certainly he has none of the profound toxæmia present in typical and severe cases of gangrene.

[1] THE LANCET, Jan. 15th, 1916, p. 123.

So striking are these discrepancies that the question rises —Is the B. perfringens actually the cause of gas-gangrene? Is there not some other infection which we have overlooked? I think this question may be answered unhesitatingly in the negative. It appears to be true that the bacillus of malignant œdema occurs in some of these cases. I have never found it myself, and if it does occur it is certainly in numbers which are quite insignificant as compared with B. perfringens. Nor is it true that secondary infections—e.g., with streptococci—play an important part, as some have imagined. If you examine the pus from a wound which has led to the production of gas-gangrene, you will, it is true, often find streptococci sometimes in scanty numbers, sometimes more abundantly; but that is common in most wounds, and for every mixed infection with these two microbes which goes on to gangrene there are a hundred which do not. Further, if you examine the extending margin of the lesion you will find, at least usually, B. perfringens in vast numbers, and no other bacteria. This fact alone would be sufficient to prove the point, but taking it in conjunction with the pathogenic effect of a large dose subcutaneously in the guinea-pig, and with Welch's experiment (to be described subsequently) there can be no doubt that the organism we are discussing is the actual cause of the disease.

Before we can investigate the question why the bacillus produces spreading gangrene in some cases, we must find out, if we can, why it does not do so in others. In other words, what are the natural defences of the body? What happens when a patient becomes infected with the bacillus, and why do we not get gangrene in every case (and they are numerous enough) in which this happens? Firstly, the bacillus is killed by blood-serum and blood-plasma. Investigation on this point is by no means easy, and I have spent many fruitless hours in the attempt to elaborate a technique which would provide a simple and accurate method for the investigation of the bactericidal power of these fluids. The main difficulty arises from the fact that in an artificial culture of the bacillus many of the bacilli are dead, or at any rate non-viable on any medium that I have been able to devise; in some cases as many as 20,000 bacilli (as counted in the counting chamber) have failed to give a culture on any medium—and I have experimented with over 50. Further, the number of bacilli necessary to give a culture is exasperatingly inconstant. I have obtained a growth from three bacilli (by count and calculation) and a few days after, using the same stock, of the same age and on a similar medium, have not obtained one with 4000. As a result of this, in putting up a series of controls, using especial care, it may happen that a certain dilution gives a growth, whereas one five or ten times as strong gives none. This renders accurate work very difficult, but as the result of a considerable number of experiments I have no doubt that serum or plasma (the latter seems a little the more powerful) kills off the bacilli in fair numbers. The effect is intermediate between that of serum on typhoid bacilli and streptococci respectively. Typhoid bacilli are killed off in large numbers, so that the merest beginner in laboratory technique cannot fail to demonstrate the fact. Streptococci are killed only in small numbers and under the most favourable conditions, so that the demonstration of any bactericidal effect on these organisms is not easy and the results not convincing to a hostile critic. It is not difficult to convince anyone that serum does kill perfringens, but the number killed is not very great. Perhaps the effect is greater than it seems, the bactericidal substances being absorbed by the dead bacilli and so prevented from acting on the living ones. Perhaps, also, the capsule which surrounds the bacilli has some effect.

But the leucocytes constitute a very much more powerful defensive force. The bacilli are usually (sometimes there are exceptions) phagocyted very quickly in an ordinary opsonic mixture. More than this, they are rapidly destroyed. This comes out quite clearly in bactericidal experiments with "reconstituted blood"—that is, washed corpuscles such as are used in opsonic experiments mixed with fresh serum so as to form a fluid approximating in composition to circulating blood, but uncoagulable. Still more convincing perhaps is the study of opsonic preparations at varying intervals of time, and watching the gradual alteration, solution, and disappearance of the bacilli inside the leucocytes. In an ordinary phagocytic mixture of leucocytes, bacilli (washed to remove toxin), and serum, the degree of phagocytosis attains its maximum in one to three hours. After this the number of bacilli per leucocyte diminishes owing to bacteriolysis; this is proved by the number of "ghosts," some only perceptible with perfect staining and illumination, others visible without difficulty, which may be seen in the earlier stages of the process. Many of the bacilli lie in vacuoles, and the stages of their dissolution can be traced readily enough. Here is an example of the process, using the bacilli in emulsion just thick enough not to be killed altogether and incubating at the body temperature.

15 minutes. Average number of bacilli per leucocyte (polynuclears), 2·9. Bacilli clear cut, staining normally. A few appear to lie in vacuoles.

60 minutes. Bacilli per leucocyte, 3·5. Some of the bacilli lie in vacuoles. Rather more than half are changed—i.e., stain badly, or show a stained or unstained sheath. The extracellular bacilli all stain deeply. On staining by Gram's method the healthy-looking bacilli retain the stain, the "ghosts" do not.

3 hours. Average per leucocyte, 1·3. Partially dissolved bacilli nearly twice as numerous as normal forms.

5 hours. Here growth of the remaining bacilli had occurred, forming long forms within the leucocytes. The latter showed extensive degeneration, having evidently been acted on by a powerful toxin. They were markedly vacuolated, the protoplasm often being replaced by a foamy mass. The lobes of the nuclei were in many cases completely separated, as they often are in old pus, or definitely pyknotic. The leucocytes had clumped together (this is usually a sign of their death or injury) rendering counting impossible. There were many ghostly bacilli, but also numerous normal forms (some within vacuoles), and also the elongated threads mentioned above. The extracellular bacilli were all normal.

But the protective effect of the leucocytes is seen even more clearly when the question is studied in Wright's emigration tubes[2] or in the modification I have used, which consists of two pieces of a thin glass slide, just large enough to slip into the bucket of a centrifuge, kept together by a U-shaped piece of cardboard soaked in paraffin. The glass sides are applied whilst the paraffin is hot, and the apparatus clipped together and allowed to cool under pressure. This provides a thin cell about half an inch wide and an inch and a quarter long (for the centrifuge I have been using) and some half millimetre thick. To use it, the blood, or mixture of blood and microbes, &c., is run in at the top, which is open, and the apparatus centrifuged before clotting has taken place. The result is, as with the emigration tube, a thick layer of red corpuscles (mixed with some leucocytes), above which there is a narrow white zone (perfectly visible to the naked eye) of leucocytes, and again above this a layer of plasma, which soon clots and forms a delicate fibrinous reticulum, into which the leucocytes can climb with the greatest facility. To examine a preparation made in this way it is only necessary to immerse it in a saline solution containing 5 per cent. formalin and to raise the upper glass side slightly with a knife. The solution reaches the film of fibrin, scarcely causing any dislocation, and fixes it. After an hour or two the upper glass may be removed completely and the film which remains attached to the lower glass and to the cardboard sides stained as required? After staining it is allowed to dry and remains firmly adherent to the glass. The cardboard is cut away and the film mounted in balsam. This is the only way I know in which phagocytosis and the movements of leucocytes can be studied under conditions at all approximating to those which occur in life.

When a mixture of blood and a culture of B. perfringens (well mixed with a paraffined pipette on a paraffined slide) in suitable proportions is incubated a very instructive series of processes take place. To begin with, it must be understood that there is an even distribution of the bacilli throughout the film, for the centrifugalisation has not been long enough to drive them to the bottom. The conditions for growth are better the further we go down in the preparation, for here there is an approach to anaerobiosis, and as we should expect the growth (after five hours or so) gets more and more abundant as we go downward until a certain point is reached, when it ceases abruptly. This is perfectly visible to the naked eye in a methylene-blue stained specimen, and this provides a remarkable indication of the enormous rate of growth of this microbe. Below this there is a narrow

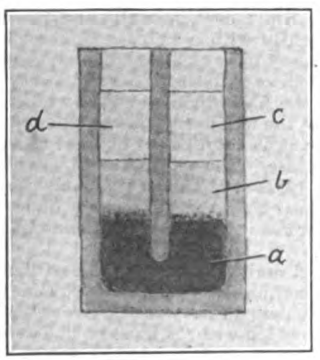
[2] THE LANCET, 1915, vol. ii., p. 787.

comparatively clear zone, then a very deeply stained band, which from its position just above the red corpuscles we can recognise as consisting of leucocytes.

A study of the preparation with the high power, and still more a comparison of preparations with varying doses of bacilli and incubated for various lengths of time, enable us to reconstitute clearly what takes place, and demonstrate beyond all doubt the defensive rôle of the leucocyte. In a specimen with a medium inoculation, such as I have described, incubated for about five hours we find that the leucocytes, which after the centrifugalisation formed a defined band with a sharp-cut upper edge, have begun to straggle out into the fibrin network above them, and have advanced about a millimetre above the point where they started. (Fig. 1 A) When we examine the zone they have traversed we find in the lower regions no bacteria at all; every one has been killed and dissolved, or, more probably, ingested and carried away by the leucocytes, doubtless undergoing intracellular digestion on its way. (Fig. 1 B.) Beyond this we see a few bacilli, some lying loose, but most in the cells, and still further out there is a zone where the leucocytes, which are abundant, are packed with bacilli; the cells themselves show signs of disintegration. (Fig. 1 C.) Beyond this again there is the felted mass of bacilli, growing unchecked, which we could discriminate with the naked eye. (Fig. 1 D.) Obviously, the leucocytes here are a perfect defence against infection. They creep out from the area from which they started, ingest the bacilli, and carry them along until they reach a region where the non-ingested bacilli have grown and have formed so much toxin that the new-comers are paralysed and subsequently killed. This process is a continuous one, the debateable ground between the serried masses of the bacilli on the one hand and the serried masses of the cells on the other being constantly traversed by leucocytes, and the invaders thus kept at their proper distance. (This constitutes an almost perfect imitation *in vitro* of the process of pus formation.) Even in the artificial conditions of the emigration chamber, where the supply of leucocytes is limited, and there is no arrangement for their nutrition and renewal, the defence is surprisingly strong, and even a heavy inoculation will be kept at bay for many hours, although the upper layer is an almost solid mass of bacilli. A study of such preparations leads to the confident belief that, given an abundant and constantly renewed influx of leucocytes, the infection, however great, can be kept at bay, and that a zone of such leucocytes would form, in the body, a perfect barrier against infection.

Next, how is this constant supply of leucocytes obtained? Obviously, the toxin, whatever it may be, of the bacillus has an attractive or chemotactic power over the leucocytes. This is susceptible of direct proof by means of a slight modification of the emigration chamber I have described. It consists of a cell which is made in the same way, but which is nearly divided into two vertical parts by means of a narrow band of paraffined cardboard running down the middle, but not quite reaching the lower wall of the cell. If this is half-filled with blood and centrifugalised the blood will divide itself into two columns, each exactly similar and each showing the alternation of red corpuscles, leucocytes, and plasma, the latter subsequently clotting, which has been already described. Various fluids can be superimposed on the top of the clots; they diffuse downwards, and their action on the leucocytes can be studied. This method is, as far as I know, the only one in which the action of drugs, &c., on the movements of leucocytes can be studied *in vitro*. As far as I can see it is devoid of fallacies. The action of two substances is compared on the self-same drop of blood under identical conditions. (Fig. 2).

FIG. 2.



Differential emigration chamber. a, Layer of red corpuscles. b, Fibrin layer, with stratum of leucocytes between it and the red corpuscles. c, d, Fluids the chemotactic effect of which is to be tested.

If we superimpose sterile broth on one column and a centrifugalised young culture, devoid of bacilli (neutralised if necessary), on the other, keep the preparation in the cold for an hour or two to allow penetration, and incubate it for a few hours, and then compare the amount of emigration, we shall see that it has progressed much further in a given time, that the leucocytes have moved further out from their original position in the column on which the culture fluid has acted. In other words, the toxin of B. perfringens, whatever it may be, has a positively chemotactic action on leucocytes. These facts give us, I think, a sufficient explanation why so few patients succumb to the infection, common as it is.

Let us now turn to the other question, and consider why, in the minority of cases, this defensive mechanism breaks down. To have a sufficient supply of leucocytes it is necessary to have a constant stream of fresh blood, and it is a well-recognised fact that nothing is so likely to lead to gangrene as any interference with the circulation. Laceration of the great vessels, pressure on them by a projectile or a piece of displaced bone, tight bandaging, &c., are always causes of danger, and to be avoided at all costs. In this connexion I should like to draw attention to a possible danger from the use of the tourniquet. Is it really necessary to use it at all, or in any but the rarest cases? Captain H. F. Marris, R.A.M.C.(T.C.), has informed me that in 1000 consecutive cases he only found it necessary to use it once, and this was in the earlier fighting, when, I should imagine, the amount of time for each case at the disposal of the regimental surgeon was much less than it is now, and the temptation to use the tourniquet correspondingly greater. Having regard to the enormous rapidity with which the bacillus of gangrene grows under favourable conditions, it appears to me to be a source of danger even when applied for a very short period. In a case in which the defensive power of the body and the dose of bacilli are evenly matched, even a short interference with the blood stream may turn the scale.

DESCRIPTION OF FIGURES IN ILLUSTRATIVE PLATE.

FIG. 1 A.—General view of an emigration chamber inoculated with a mixture of normal blood and B. perfringens, and incubated five hours.

FIG. 1 B.—A more magnified view of the leucocytic zone of the same preparation. Note the complete absence of bacilli. The leucocytes have emigrated from the compact layer they occupied at first.

FIG. 1 C.—The zone immediately above that last figured. In the lower area (which has been traversed by some leucocytes), no bacilli. In the upper portion, a few, mostly phagocyted by the leucocytes.

FIG. 1 D.—Zone just above the last, showing the enormous masses of bacteria. Some trace of phagocytosis can be seen in the lower part of the illustration, but the bacilli have grown out into masses, destroying the leucocytes.

FIG. 3 A.—Showing the emigration of the leucocytes in a differential emigration chamber (Fig. 2) in response to plain broth.

FIG. 3 B.—From the other limb of the same chamber, showing inhibition of emigration by the toxin of B. perfringens.

But this does not solve the difficulty. Admitting that the bacilli may grow well in dead or devascularised tissues, why does not the invasion stop when healthy tissues with a perfect blood-supply are reached? It does not, but spreads in them with a rapidity hardly equalled by any microbic infection. Kenneth Taylor, in the article already mentioned, suggests that the pressure of the gas generated in the tissues is usually, if not always, the most important part of the infection. "So it may be charged with the development of highly pathogenic possibilities in a usually rather innocent infection. It brings about: (*a*) the death of the tissues from the resulting anæmia produced by a pressure much higher than that of the circulating blood; (*b*) the actual mechanical fragmentation of the tissues, especially muscle; and (*c*) the mechanical scattering of the infection."

I disagree with this altogether, and for this reason: gangrene may occur, and the patient may die, without the formation of any gas in the tissues, and in many cases of severe disease there is but little, and none in the advancing edge. Taylor regards the disease especially as a muscle infection, but this is only because the gas is specially produced in those organs; the infection spreads equally in the subcutaneous tissues, which may often present enormous numbers of

FIG. 1A.

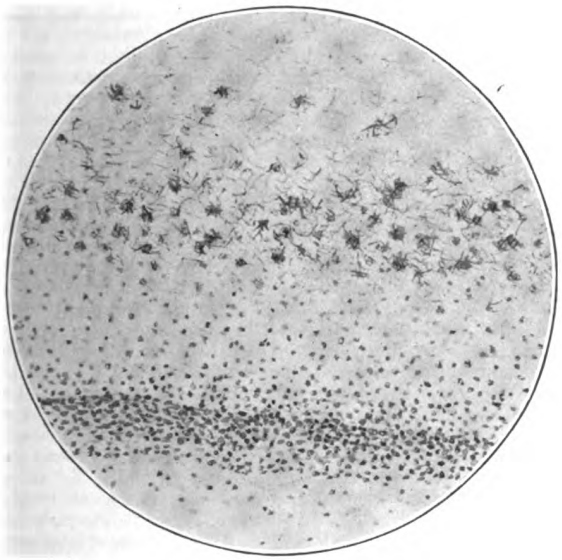


FIG. 1B.

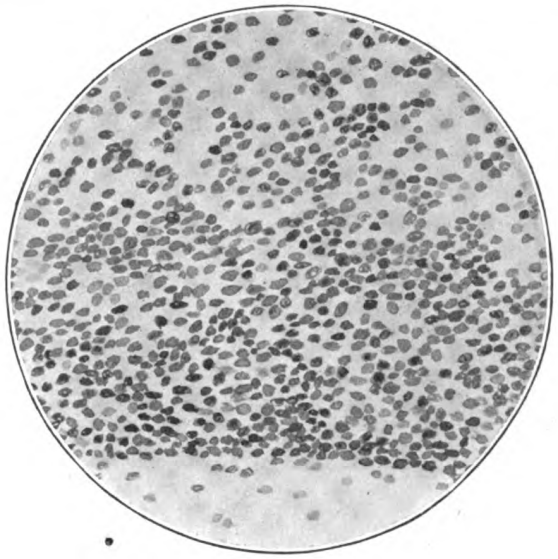


FIG. 1C.

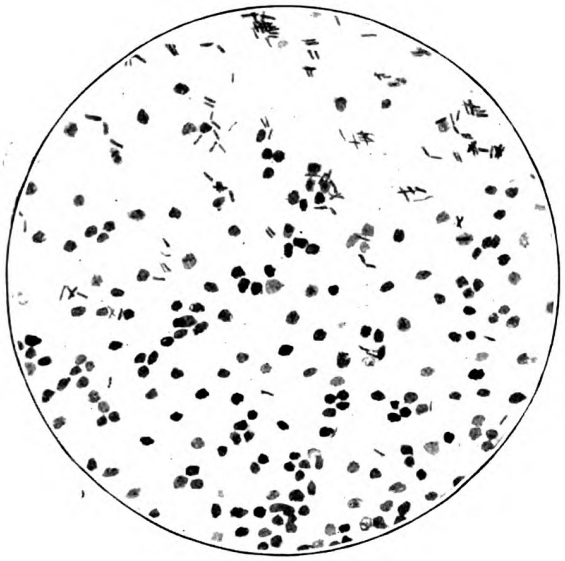


FIG. 1D.

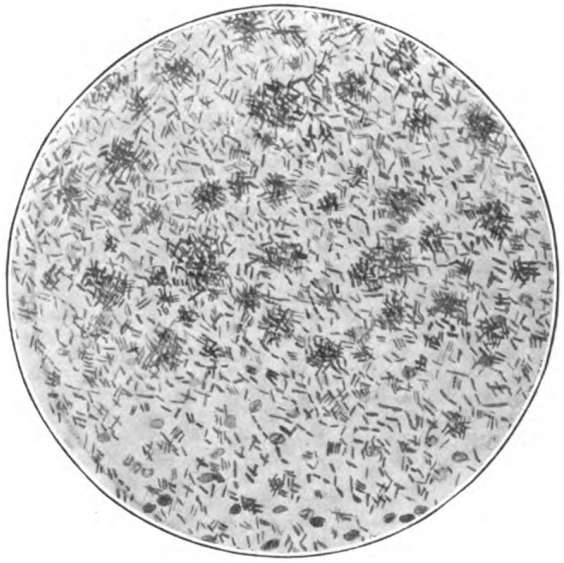


FIG. 3A.

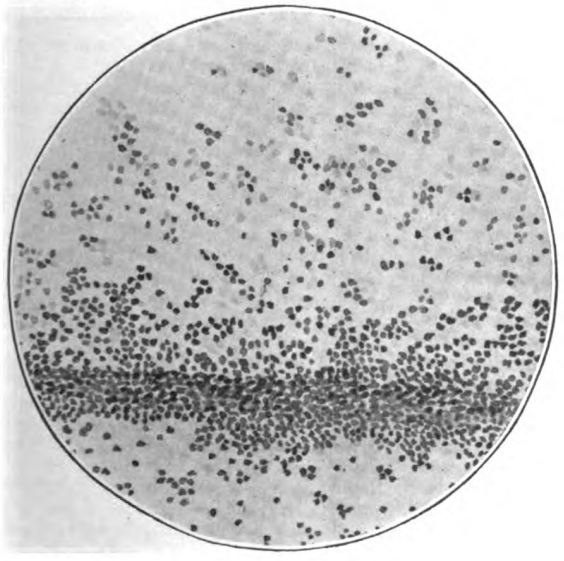
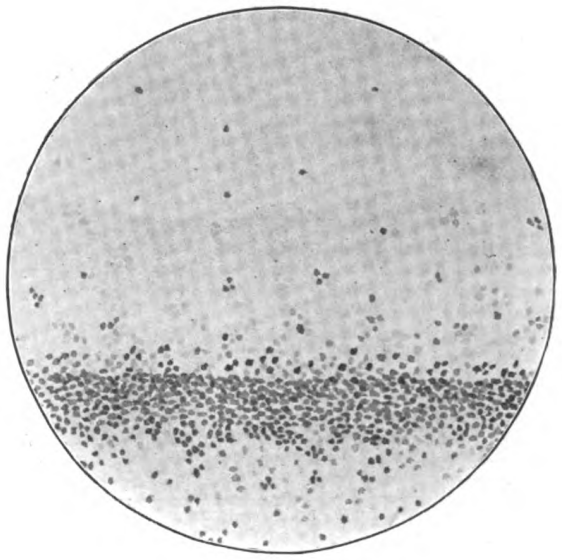


FIG. 3B.



bacilli, though there is no gas whatever. The facts are easily explicable when we remember that sugar is necessary for the production of large amounts of gas; thus, if we inoculate a rabbit intravenously and immediately kill it and put it in an incubator at body temperature (Welch's experiment) we find that the bacilli grow in all parts of the body with amazing rapidity, but form gas first and most abundantly in the liver and kidney, regions rich in sugar. Sugar is also present in the muscles, and gas occurs in these regions, but not as early or as abundantly as in the viscera mentioned. The skin is poor in sugar, hence there is little or no gas formed in cases where an incision or a section will show abundant bacilli.

The explanation rests, I think, in the fact that the toxin of the bacillus will inhibit emigration and kill the leucocytes when present in large amount. This can be shown with the differential emigration chamber described above, using an old culture (48 hours), so as to get a powerful toxin; the addition of chalk is necessary, and even then not all cultures give a toxin powerful enough for the purpose. When the conditions are satisfactory very little emigration occurs in the specimen acted on by the toxin, in sharp contrast to that which is seen in the control specimen. (Fig. 3 A, Fig. 3 B.) And if we examine the material from the gangrenous region or from the wound which causes it and compare it with ordinary perfringens pus we are immediately struck with the difference. On the one hand, in the gangrene cases we find millions and millions of bacilli, but very few leucocytes, and those that are present showing evident signs of degeneration and solution (the bacillus is a proteolytic agent, though not a very powerful one). (Fig. 4.) In the pus, on the other hand, there are abundant healthy leucocytes, some with ingested bacilli,

FIG. 4.

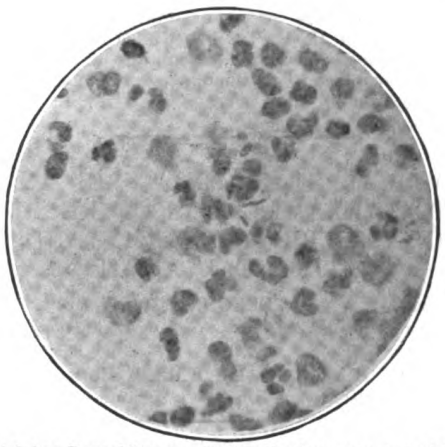


Fluid from gangrenous limb. Notice the enormous number of bacilli and the scanty number of (degenerated) leucocytes.

and, compared with the gangrene fluid, very few bacilli. (Fig. 5.) Evidently, therefore, the toxin of B. perfringens, if sufficiently strong, no longer serves to attract leucocytes. I cannot say whether it repels them or no. I have seen nothing to suggest to me that any agent does so, although, of course, negative chemotaxis is well known amongst the lower animals and plants. But it kills them, as the opsonic experiment quoted above shows us, and this is sufficient for the purpose. If therefore toxin is formed in sufficient amount the defence of the body, as far as it is entrusted to the leucocytes, breaks down altogether; the leucocytes are not attracted to the infected region, and those that are there already, all too scanty as they are, are killed.

The question resolves itself into this: What are the conditions under which a great amount of toxin, an amount sufficient to paralyse the leucocytic defences of the body, can be formed in a short time? I have already mentioned the enormous rate of growth of the bacilli under favourable conditions, and this is nowhere better shown than in dead tissues. If a comparatively small dose (50 millions or less) of bacilli be injected into the ear vein of a rabbit, which is immediately killed and incubated, the number of bacilli in the internal organs, especially the liver, in three to five hours is extraordinary: a stained smear may look like a pure culture, thickly spread, and scarcely any cells may be visible. Dead blood (if I may use the expression) is an equally good culture-medium, and the heart-blood of the animal shows abundant growth. These are the two conditions we meet with in wounds: dead and lacerated

FIG. 5.



Pus containing B. perfringens. Notice the large number of healthy leucocytes and the small number of bacilli.

tissues, thoroughly inoculated with dirt, and a large blood-clot, very likely containing a piece of clothing with mud in its meshes. In either of these bacterial growth may take place unrestrained, and if there is no free escape for the toxin this may accumulate to such an extent that when it soaks through into the healthy tissues the leucocytes are killed on the spot, growth continues, and spreading gangrene is set up. This, of course, will be facilitated by any conditions interfering with the supply of blood; and in this connexion I must mention a fact first called to my attention by Captain Fitzmaurice Kelly, that gangrene frequently follows wounds of the forearm and leg, where the muscles are enclosed in fibrous aponeuroses, and are readily strangled if swelling takes place therein. A hæmorrhage into such a muscle, provided there were a heavy inoculation with perfringens, would be extremely likely to be followed by gangrene, since the pressure exerted by the hæmorrhage would render the muscle anæmic and so interfere with the leucocytic reinforcements on which the successful defence of the tissue depends. Hence, perhaps, the reason why gangrene usually begins in muscle, though it can subsequently spread anywhere.

Another point worthy of consideration is the fact that the toxin, when it reaches a vein, causes thrombosis, and thus the vascular supply is still further interfered with. The artery holds out much longer. And I am inclined to think that if there is any mechanical result from the gas, as Dr. Taylor suggests, it acts by occluding the veins. This might cause venous stasis above the region already infected.

While we differ on the pathology of the condition, Dr. Taylor and I agree (as, indeed, do all that have had experience on the matter) as to treatment. Early drainage, removal of clot and dead tissue, encouragement of the circulation—this is all that can be done, and is, I believe, sufficient.

A few more remarks on the general symptoms may be appended. There is a very marked leucocytosis (40,000 or more), as we should have expected; the toxin enters the blood stream, but is too dilute there to repel the leucocytes. There is very rapid blood destruction, so that a blood film presents an appearance suggestive of leucocythæmia, so abundant are the leucocytes in proportion to the red corpuscles. The polynuclears are mainly increased, and there is a very marked "shift to the left" in the Arneth count. The blood serum is tinged a bright yellow, and there is a very marked buffy coat.

Sir Almroth Wright has made some interesting observations, which he has kindly allowed me to quote, which show that there is a marked decrease in the alkalinity of the blood. There is a temptation to correlate this acidosis with the production of organic acids by the bacillus, and this is probably the correct explanation. Be this as it may, in two cases out of three in which the treatment was tried, he

obtained very definitely good results by the intravenous injection of 300 to 400 c.c. of 4 per cent. solution of sodium bicarbonate, this being followed by a rapid amelioration of the toxic symptoms. This is important, and well worth trying, as it rests on rational grounds and has been followed by very definitely good results.

I have to thank Colonel Sir Almroth Wright, A.M.S., in whose laboratories this work was done, for much helpful advice; Lieutenant H. H. Tanner, R.A.M.C.(T.C.), for his admirable drawings; and the Medical Research Committee, under whose auspices I had the opportunity of carrying out these investigations.

Harley-street, W.

THE VISUAL STANDARDS USED IN THE MEDICAL EXAMINATION OF RECRUITS IN THE BRITISH ARMY AND CONTINENTAL ARMIES.

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UP to the commencement of the present war the British army was organised largely with a view to its use in foreign countries at a great distance from its base. Under these circumstances the difficulties attendant on the provision of spectacles and their use by men on active service were overcome by the simple method of prohibiting glasses altogether, while by adopting a sight test conducted without glasses recruits with other than low errors of refraction were largely excluded. A recruit who failed to pass the test without glasses was finally rejected, no matter how good his corrected vision might be. At that time, and in the earlier stages of the present war, the standard was 6/24 with each eye, or 6/6 with one eye and 6/36 with the other.* With the increasing need for men, however, a modification was introduced, and in September of last year the standard was altered to 6/24 in each eye or 6/24 in the right eye with 6/60 in the left for general service, while 6/60 in the right with 6/24 in the left was accepted for the auxiliary services, the test being still conducted without glasses. The use of correcting glasses was, however, permitted in home service and garrison service at home and abroad, while steps were taken to supply correcting lenses to men who had joined the army and were subsequently found to be visually defective. While these modifications indicate a tendency on the part of the authorities to move in the right direction, an examination of the system adopted in the armies of the great continental powers, as given in the following table, will show how imperfect our system still remains.

A most striking and important feature in regard to these standards is the great similarity between them. France, Germany, and Austria have devoted the maximum of study and attention for half a century, if not longer, to their military organisation. Their collective experience must have made them thoroughly acquainted with the relationship of visual acuity to military efficiency, and we may be sure that they would not accept men for either combatant or auxiliary service who might be expected to prove useless or inefficient on account of defective eyesight.

In every case it is the vision with glasses or corrected vision which determines the acceptance or rejection of a recruit. In France, Germany, Austria, and Italy men with myopia as high as six or seven diopters (a recent letter from Valude, of Paris, gives the limit as seven to eight diopters) are accepted for combatant service provided that the vision with glasses reaches the required standard. It must be remembered that the uncorrected vision of a man with six or seven diopters of myopia will not be more than 3/60 without glasses. Contrast this vision with that required by the British regulation for general service—namely, 6/24 in each eye, or 6/24 in the right with 6/60 in the left *without glasses*, corresponding to 2·5 and 3·5 D. of myopia at most.

Although the British standard is that indicated above—and we are unaware of any new standard since September, 1915—a modification has been adopted within the last few months, as is evident from a statement recently made in the House of Commons by Mr. Tennant to the effect that "recruits for the British army whose standard of vision does not come up to that required for general service are not rejected, but are utilised where it is thought their services would be most valuable, provided that they can see with glasses to shoot." This statement leaves the standard for general service as it was, so that all myopes with as low a defect as 3·5 D. in the worse eye are excluded from combatant service in our army, though not in the armies of France, Italy, Germany, and Austria. In regard to hypermetropia and astigmatism the regulations of continental armies follow similar lines, while here again in our army men with such refractive errors are excluded from general service, unless they can pass the sight test without glasses.

The main defects of the British system in the order of their importance are the following: 1. The prohibition of the use of glasses during the test, thus making the uncorrected vision the standard of visual efficiency. 2. The insistence on an arbitrary and unnecessary standard of vision in the worse eye when the sight in the better eye is good. 3. The failure to ascertain by the test whether any visual defect present is caused merely by a refractive error corrigible by glasses or by organic disease of the eye.

* Swanzy: Diseases of the Eye, eleventh edition, p. 626.

Table showing the Visual Standards for Recruits in the Chief European Armies.

—	Amount of short sight (myopia) allowed.		Standard of corrected vision.		Remarks.
	Combatants.	Non-combatants.	Combatants.	Non-combatants.	
GERMANY	6·5 D. For Landsturm no limit if standard of corrected vision attained.	—	1/2 in better eye. Other eye may have minimal vision. For Landsturm vision = 1/4. If one eye has vision = 1/2 the other may be blind.	—	Vision with glasses (corrected vision) counts.
AUSTRIA...	6 D.	Above 6 D. no limit if standard of corrected vision is attained.	Group 1, 1/2 in each eye. Group 2, 1/2 in one; 1/4 in other.	1/4 in one; 1/10 in the other.	Vision with glasses counts.
FRANCE...	7 D.	Above 7 D. no limit if standard of corrected vision attained.	1/2 in one eye; 1/20 in the other.	1/4 in one eye; 1/20 in the other.	Vision with glasses counts.
ITALY ...	7 D.		1/3 in each eye, or 1/12 in one eye if the other has 1/1 (full vision).		Vision with glasses counts.
GREAT BRITAIN	No amount specified, but according to vision required highest amount possible is about 2·5 D.	No amount specified, but according to vision required highest amount possible is about 2·5 D. in better eye and 3·5 D. in worse eye.	No correction allowed for general service. Uncorrected vision must be 1/4 in each eye, or 1/4 in the right eye with 1/10 in the left.	Uncorrected vision must be 1/4 in better eye, 1/10 in worse eye. The better eye may be the left.	Vision without glasses counts. For home service, garrison service, and garrison service abroad glasses are allowed within unspecified limits.

Notes.—1. The standards in the table are peace standards, except that of Great Britain, which is a war standard and by far the highest. 2. Three diopters of myopia will reduce the vision to below the British army standard in practically every case. 3. The regulations in continental armies as to forms of refractive error other than myopia follow similar lines.

1. The continental powers take the view that it does not matter very much what a recruit's vision is without glasses, provided that he gets 6/12 vision in the better eye with spectacles. They simply neglect the uncorrected vision in cases in which it can be improved by glasses—in fact, they apply to their military service the practice which holds good in civil life where no one is considered to be disabled by his sight if his corrected vision is moderately good. As suggested in the beginning of this paper, it is easy to see why in previous times recruits for the British army were accepted on a test of uncorrected vision; it is not easy to understand why this principle should be adhered to at the present time when it has become necessary to utilise every available man and our main army is fighting in allied and adjacent countries.

2. In the British army the standard for general service requires vision of at least 6/60 in the worse eye, which must be the left. This means, first of all, that there may not be a refractive error of any kind which in its uncorrected condition reduces the vision in this eye to below this level no matter how good the corrected vision may be. Secondly, this regulation excludes from general service a considerable number of men who have very defective vision in one eye (e.g., certain cases of squint, corneal scarring, &c.), although the vision of the other eye may be excellent. These men are often unconscious of any visual defect, and in civil life their fitness for work is never questioned. In Germany combatants are required to have corrected vision of at least 6/12 in one eye; in the other the *corrected* vision may be minimal, and in the Landsturm the second eye may even be blind. It must be obvious in any case that a man with good vision in one eye and vision even much below 6/60 in the other is much more likely to prove efficient than a man whose vision in each eye is only 6/24. Yet under the present arbitrary regulations the former is excluded from general service even if his good eye is the right, while the latter is presumed to be visually the better of the two. In regard to such cases it cannot be too strongly emphasised that the continental powers are unanimous in the adoption of a practice essentially different from that of the British army.

3. A sight test based on uncorrected vision and with a standard of 6/24 and 6/60 also fails to differentiate between cases of defective vision due to refractive errors and those due to organic disease of the eye. While this question is of less importance, a considerable number of men visually unfit for soldiering do pass the test. We have ourselves seen cases of cataract, optic atrophy, and very bad corneal opacities which must have been present before enlistment and which were the cause of men being invalided home from the front. More numerous are the hypermetropes who pass the test while they are well and strong, but who, after some months of trench life and perhaps a wound, find that their visual acuity is seriously reduced owing to difficulty in maintaining accommodation.

It was stated in the House of Commons on March 16th last that the British visual standard was fixed by a mixed committee of military officers and ophthalmic experts. We are confident that British ophthalmic surgeons will be found practically unanimous in condemning the present system and we are informed by the Ophthalmological Society of the United Kingdom that they have not been consulted since 1906.

In collecting information as to the sight tests in other countries we were strongly impressed by the fact that for scientific studies of the vision required for shooting and for general military service it is necessary to go to foreign literature, as nothing of this kind appears to have been undertaken in Great Britain. We have been unable to find any reference to the subject in English medical literature, whereas it is fully discussed in continental journals by numerous writers, amongst whom Scherer, Steiger, Coullaud and Ginestous, Lagrange and Cuny may be mentioned. In some of their papers extensive bibliographies are given without mention of a single English work. This absence of military ophthalmology in Great Britain is as regrettable as it is important, and may undoubtedly be attributed in great measure to the operation of a sight test for recruits conducted without glasses, and which excludes without question cases of bad sight in one eye only.

As far as shooting is concerned, it is generally agreed that vision of 6/12 at least is necessary, and on the continent it is believed that a soldier with 6/12 vision wearing glasses is more efficient as a combatant than another with 6/24 vision without glasses. Continental authorities have found that on the average soldiers who see best shoot best, and that those who wear correcting spectacles shoot better than those who do not.

Summary.

1. The present sight test for general service for recruits for the British is by far the highest in Europe, and excludes from the fighting line large numbers of men who are freely used as combatants in the armies of the chief continental powers.

2. This is due to the fact that in the British sight test the vision without glasses (uncorrected vision) is what counts, whereas in the chief continental armies it is the vision with glasses (corrected vision) which counts.

3. In view of the present want of men there is urgent need for the immediate adoption of a remodelled sight test based on corrected vision, on the lines of the military visual standards in use on the continent of Europe.

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SPINAL ANÆSTHESIA, WITH SPECIAL REFERENCE TO THE USE OF NOVOCAINE.

BY C. COLGATE HOLMAN, M.B., B.C. CAMB., F.R.C.S. ENG.

THE employment of novocaine as an agent for inducing spinal anæsthesia has been advocated by Canny Ryall.[1] More recently two series of prostatectomies in which this drug was employed have been published by Page[2] and Mortimer[3] respectively. These two articles are of special interest, as the writer in each case is an anæsthetist and not a surgeon.

Prior to using novocaine I had used Barker's stovaine-glucose solution in some 30 cases. Experiments carried out by Le Brocq[4] led me to expect that in novocaine I should find a drug almost equal to stovaine in anæsthetic action and considerably less deleterious to the patient. Le Brocq, working with rabbits, found that if the toxicity of cocaine was taken as the standard unit then the toxicity of stovaine was 0 625, of novocaine 0·490. Injection of a 10 per cent. solution of stovaine caused intense hyperæmia of the tissues followed by sloughing. After injection of a 10 per cent. solution of novocaine there was no swelling and no hyperæmia; the part appeared normal and remained so. The preparation used in this series of over 300 cases was a 5 per cent. solution of novocaine and mannitol. The dose employed for an adult varied from 6 cg. to 8 cg. of novocaine.

Technique.—The injection was in every case made with the patient lying on his side with knees drawn up and back rounded. Barker's syringe was used. Puncture was usually made in the second or third lumbar interspace in the mid-line. In the earlier cases 3 or 4 drachms of cerebro-spinal fluid were allowed to escape before the injection was made, in the later cases a few drops only. If anæsthesia did not reach a sufficiently high level in five minutes the table was tilted. Failure to withdraw cerebro-spinal fluid occurred twice in the last 200 cases; in one case the needle was too short. In some cases several attempts had to be made before success was obtained, and occasionally lateral puncture succeeded after median puncture had failed. It is useless to make an injection unless a flow of cerebro-spinal fluid is obtained. Tingeing of the first drops by blood is of no importance, but if pure blood flows from the needle a fresh puncture should be made. A flow of pure blood occurred on a few occasions only, and in no case was it followed by any untoward symptoms. In nearly 4 per cent. of cases

anæsthesia after a successful puncture was absent or insufficient. This was generally remedied by giving a second injection, and in no case did any ill-result follow. Probably by some error in technique the first dose had failed to reach the proper spot. The average duration of anæsthesia was about one hour. On 4 occasions a second injection was given at the end of periods varying from one to one and a half hours after the first. The second dose was half the amount of the first. Results were satisfactory. In most cases anæsthesia reached to about the level of the umbilicus; in a few cases as high as the second rib. On 4 occasions, after an operation had been started successfully under spinal anæsthesia, a general anæsthetic had to be given for a varying length of time.

Operations for which spinal anæsthesia was used.—In the majority of cases the site of the operation was below the level of the umbilicus—e.g., for hernia, hæmorrhoids, and varicose veins. Anæsthesia in the case of the two latter was always perfect. In operating on varicose veins spinal anæsthesia is specially useful, as the patient can lie in any position convenient to the surgeon. Some of the hernias were very large, and silver filigrees were used. Patients frequently complain of a dragging sensation in the chest when the neck of the sac is being pulled upon, but this seldom amounts to more than a passing discomfort. There was one case of suprapubic prostatectomy, an old man, aged 77, who distinguished himself by walking to the lavatory two hours after the operation. He was none the worse for the venture. This patient received a dose of 7·5 cg. of novocaine, so that it seems somewhat unjust for a surgeon to blame the method because a man aged 68 dies a few hours after receiving a dose of 15 cg. for a similar operation.[5] As regards abdominal operations proper, there were 8 cases of appendicectomy, in one of which chloroform had to be given for ten minutes, 4 cases of umbilical and 1 of ventral hernia, and 1 case of intestinal obstruction.

Type of patient.—The majority of patients were males, and their ages varied between 14 and 77. One patient was a medical man who had a dread of general anæsthesia. He underwent an operation for piles under spinal anæsthesia and was pleased with the procedure. My impression is that the best type for spinal anæsthesia is the stout alcoholic patient who often takes general anæsthetics badly. The thin nervous subject frequently complains of feeling faint at the beginning of the operation and is more liable to complain of unpleasant sensations if the peritoneum be pulled upon.

Symptoms occurring during the operation.—Faintness, often accompanied by nausea or vomiting, is common during the first ten minutes. It is usually relieved by half an ounce of brandy or a hypodermic injection of strychnine. Vomiting while on the table was noted in 4 per cent. of cases. The series includes several cases of strangulated hernia, and on nearly every occasion the bowels acted on the table after the constriction had been relieved. Serious symptoms never occurred in patients under 50 years of age, but there was more than one case of alarming syncope in older subjects. The weak point of spinal anæsthesia is that one has to give a more or less fixed dose of a potent drug, and no allowance can be made beforehand for the idiosyncrasy of the patient. I agree with Canny Ryall[1] in thinking that serious symptoms are directly due to the poisonous action of the drug on the nervous centres. This action is best combated by hypodermic injection of strychnine or, if this fails, by intravenous infusion of saline. I have not tried injecting strychnine into the spinal canal according to the method of Jonnesco, but the uniformly safe results claimed by this surgeon have not been obtained in this country. The matter under discussion is of so much importance that I will give notes of the more severe cases. No death occurred which could be directly attributed to the anæsthetic in the case of novocaine, but I am of the opinion that this drug is no safer than stovaine because its lower degree of toxicity is neutralised by the fact that a larger dose is required.

CASE 1.—A man aged 70, who had recently had half his tongue removed for cancer, was admitted suffering from a strangulated inguinal hernia. An injection of 6 cg. stovaine was given in the lumbar region. During the operation he lost consciousness and his pulse could not be felt. An intravenous infusion of saline was given and he rallied temporarily, but died 12 hours later. It is generally agreed at the present day that this type of case should be operated on under local anæsthesia.

CASE 2.—A female, aged 55, was admitted suffering from a strangulated hernia. A hypodermic injection of morphine gr. 1/6 with hyoscine gr. 1/150 was administered and followed by a spinal injection of 5 cg. stovaine-glucose. Three minutes afterwards she became unconscious, with shallow respirations and feeble pulse. She improved after injectio strychninæ hypodermica ♏x, but did not recover consciousness until the operation was finished. There were no subsequent ill-effects.

CASE 3.—Male, aged 53. A thin, unhealthy-looking man who had suffered from a tape-worm for about a year. He was admitted on account of a small hernia of the linea alba situated above the umbilicus. He said this caused him much pain and that he suffered from vomiting and constipation, but it is questionable whether these symptoms had any connexion with the hernia. A dose of 8 cg. novocaine was injected, and anæsthesia rose to about the level of the hernia. Five minutes after the injection he became faint and vomited foul-smelling material. He became rapidly worse and lost consciousness. The pulse could not be felt. Injectio strychninæ hypodermica ♏vij was given, followed by oxygen inhalations and a pint of saline intravenously. He rallied after the infusion and recovered consciousness in about ten minutes. An action of the bowels took place on the table. The operation was concluded without further trouble, and there were no after-effects.

CASE 4.—Male, aged 53. Operation for radical cure of inguinal hernia. Dose of novocaine 8 cg. Fifteen minutes from the start patient became faint and said he could not see. Pulse and respirations were very feeble. He improved after injectio strychninæ hypodermica ♏x. There was no further trouble.

Similar cases occurring after stovaine are recorded by Barker,[6] Milward,[7] Owen Richards,[8] and Madden[9]; after tropacocaine by Morrison[10]; and after novocaine by Mortimer.[3] The occurrence of such cases is disappointing, because many patients who appear to be equally bad subjects take spinal anæsthesia without a bad symptom. One case in particular impressed me. The patient was a man aged 66 suffering from diabetic gangrene. He was stout, cyanosed, and dyspnœic. After being placed on the table he was scarcely able to move without help. An injection of 7·5 cg. of novocaine was given and amputation through the thigh performed without a single bad symptom. He died 36 hours later, but death did not appear to be in any way connected with the anæsthesia.

Serious symptoms seem to occur most often in old and enfeebled patients, especially in those suffering from intestinal obstruction of long standing. I should hesitate to use spinal anæsthesia in the case of patients suffering from shock following severe injuries, although some authorities recommend it. The best treatment seems to be immediate intravenous infusion of saline. My impression is that in the case of old or debilitated patients an injection of strychnine before going to the operating theatre is useful as a prophylactic. One elderly patient underwent two operations for large herniæ. On the first occasion operation took place on the day after admission and he became markedly faint. The second operation was done after he had had three weeks complete rest in bed and he showed no trace of faintness.

After effects.—Backache and retention of urine appear to be less common than after a general anæsthetic. Some authorities express a contrary opinion. Headache is often troublesome during the first 48 hours. In my first 98 cases, thinking that headache might be caused by increased tension of the cerebro-spinal fluid, I allowed 3 or 4 drachms of fluid to escape before making the injection. Headache occurred in varying degree in 42 per cent. of these cases. In the later cases I allowed only a few drops of fluid to escape. Headache followed in 21 per cent. It was usually slight and relieved by aspirin. The figures are not large enough to be of much value, but it is reasonable to suppose that if one is injecting about 1 c.c. of solution it is best not to allow more than that amount of fluid to escape. My attention was first directed to this point by several cases, occurring among the early ones, in which the patient was comfortable while in bed, but complained of headache, faintness, and giddiness for several days after getting up. I attribute these symptoms to disturbance in the tension of the cerebro-spinal fluid. An instructive case occurred amongst the earliest ones, in which I employed stovaine. A man aged 44 was given 4 cg. of stovaine-glucose in order that some adhesions in his knee-joint might be broken down. He was kept in bed for 48 hours, and as he had no bad symptoms he was allowed to return home.

He was readmitted in a few days suffering from very severe headache and pain in the back of the neck. All symptoms cleared up completely after further rest in bed. A rise of temperature to over 100° F. occurred in a few cases, but this is not uncommon after general anæsthesia.

Permanent after-effects are very rare. I wrote to a large number of patients nine months after operation and only two made any complaint. One man who had undergone an operation for piles wrote that the operation was quite satisfactory, but that he had suffered terribly with his nerves since. The other said he suffered from aching pain in the back. None of the terrible sequelæ recorded by continental surgeons was observed.

In conclusion, I would emphasise the fact that spinal anæsthesia is a method which must be employed with scrupulous care and attention to detail. It is more suitable for use in hospitals where the nursing staff is familiar with the technique and after-treatment, than it is for casual operations in private practice. Like many valuable operations it has sometimes obtained a bad reputation through improper performance. Whether novocaine has any special advantage over stovaine I am not prepared to say. Its lower toxicity is neutralised by the fact that a somewhat larger dose is required. That it is less irritant to the tissues is, I believe, generally admitted.

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THE CLINICAL MANIFESTATIONS OF GAS IN MILITARY MINES.

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TEMPORARY CAPTAIN, R.A.M.C.

THE following notes are mainly based upon a series of over 100 cases which have passed through my hands during the last few months. I have to acknowledge much valuable help in the study of this subject from Captain Logan, R.A.M.C., who has generously placed the results of his extensive experience at my disposal.

"Gassing" is responsible for the great bulk of casualties among miners following the explosion of a charge. Military mining differs from industrial mining in three particulars which are of importance in the present connexion. The charges used are very much larger, the air space of the mine is very much smaller, and adequate ventilation of the shafts and galleries is much more difficult to maintain. The harmful gas produced by an explosion may for practical purposes be regarded as consisting only of carbon monoxide; nitrous fumes are also present and may cause irritant effects in some cases, but these are relatively unimportant. The quantity of carbon monoxide produced by the explosion of a mine charge is considerable; if, as sometimes happens, the explosion is incomplete and part of the charge burns instead of detonating, the carbon-monoxide production is much increased. It is remarkable that in the area with which I am familiar more casualties occur during the few days subsequent to the explosion of a hostile mine than at the time of the explosion itself. This is to be explained by the friable nature of the chalky soil in which the mine is sunk; the force of the explosion fissures and shatters the soil throughout a wide zone, and in the crevices thus formed the gas collects till it is freed by fresh working or puffed out into the galleries by gradual settling of the soil.

The following characters of carbon monoxide should be borne in mind: the gas is odourless, it does not affect a candle flame, its presence in the atmosphere at a strength of 0·1 per cent. may be fatal, and its action is cumulative. Men may thus gradually come under its influence without any warning of its presence.

Premonitory symptoms.—These may be absent; in many cases, however, warning is given by a feeling of heaviness and loss of power in the limbs, especially in the hands and arms; sometimes the first complaint is of giddiness or light-headedness. The loss of limb-power is important, as it may prevent escape or lead to falls from the ladder while the man is attempting to climb out of the mine. All degrees of severity are met with, from transient disability to complete collapse and death; fortunately the cases of moderate severity are the most common.

Appearance of the men.—Other observers lay stress upon the pink colour of the cheeks and lips, and the appearance of cherry-red patches upon the skin of the chest and back have been described; in my own cases, all of which have been seen without delay, pallor has been constant; a recent writer had called attention to the occasional late appearance of the classical pink tint in fatal cases of carbon-monoxide poisoning.

The *attitude* in the cases able to walk to the aid-post is very striking: it is that of extreme physical and mental fatigue. The men crouch on a bench with elbows on knees and supporting their heads in their hands; they show a great disinclination to speak or move. The mental state varies, however; sometimes considerable mental excitement is present, suggesting a thoroughly happy "drunk."

Pulse-rate.—In mild cases this is unaltered or slightly raised. In severe cases it may rise to 140 or more, while Captain Logan has told me of one case in which the patient was found unconscious and convulsed, with a pulse-rate of 38–42 beats per minute.

Temperature.—The patients, even when only slightly affected, are cold. This is partly due to the fact that they are brought thinly clad from the close atmosphere of a mine into the open air; but it is an established fact that carbon-monoxide poisoning is always associated with lowering of the body temperature. In bad cases severe rigors may occur.

Respiration.—In mild cases this is slightly increased in rate; in severe cases it is slowed or abolished.

Vomiting is an almost constant symptom; it occurs usually when the man is brought out into the fresh air, and it frequently affords relief to his feeling of weakness or giddiness.

Headache comes on usually on exposure to fresh air; it is often very severe and is usually frontal in position. It is one of the most lasting of the symptoms, and may persist, even in a mild case of poisoning, for over seven days.

Præcordial pain is not a very common symptom, it may occur with palpitation and a throbbing headache. It has been found, however, in a good many cases, especially in men who have repeatedly been exposed to gas; in these men other phenomena of heart fatigue may be present, such as superficial præcordial tenderness and undue breathlessness on exertion.

Nervous phenomena.—Psychical or physical changes may ensue upon repeated exposure to gas. Several men who originally possessed more than the average of pluck and determination have "lost their nerve" and developed insomnia, tremor of hands, and weakness of will power.

Treatment.—This may be summed up in warmth, oxygen, artificial respiration, rest. The lowering effect of CO upon the body temperature has been referred to; every effort should be made to provide warmth for these men with the least possible delay. Circulatory stimulants, such as hot strong coffee, are of great value.

Oxygen administration properly carried out is most beneficial; a well-fitting mask and a liberal amount of gas are necessary. It is possible that oxygen tends to wash out CO from the blood; whether this be so or not, it is a most valuable help towards recovery.

Artificial respiration should be carried out, if circumstances allow, by Schäfer's method; this allows of continuous oxygen administration, and can be employed with the minimum of fatigue to the attendant. Prolonged and unremitting efforts may be necessary; I have seen recovery take place after two and three-quarter hours' apparently fruitless work. Some cases begin to breathe spontaneously after a time, and then suddenly slip back and fail to respond to further efforts. Hypodermic injections of strychnine are of value in stimulating the respiratory centre.

Rest is essential; it should be absolute for at least 24 hours, even in mild cases, and proportionately longer in the more severe.

Practical experience affords two warnings. Severe cardiac embarrassment has followed the taking of phenacetin and aspirin for the severe headache. The use of these drugs in these cases is now forbidden.

Men who have been slightly gassed should not be allowed to descend the shaft again till recovery is complete; the cumulative action of carbon monoxide must never be forgotten.

ON FOREIGN BODIES IN THE BLADDER RESULTING FROM GUNSHOT WOUNDS.

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THE annotation on the above subject in THE LANCET of Dec. 18th, 1915 (p. 1361), suggests the publication of the following cases:—

CASE 1. *Shrapnel bullet in the bladder.*—Sergeant ——, aged 27, was wounded by shrapnel on the morning of Sunday, Nov. 1st, 1914, while carrying a despatch near ——. He felt as if he had been shot in the right knee, for there was severe pain in the leg and foot, and he was unable to walk. A motor cyclist carried him on his shoulders to hospital, where it was found that the bullet had entered through the right buttock and had not found an exit. The man soon discovered that there was something wrong with his urinary apparatus, and for 48 hours all attempts to pass urine were unsuccessful and caused great pain. On arrival at —— he finally succeeded in micturating after getting up in bed on his hands and knees. He did not notice whether there was blood in the urine. After remaining for five days at —— he was sent to England, where all discomfort associated with micturition disappeared and the wound in the buttock rapidly healed. He went home on furlough on Nov. 23rd, and the pain in his right foot and leg which he had experienced on being wounded now returned and confined him to bed. During the latter half of his month's furlough he was able to be out of bed, and it was then that he experienced considerable trouble in micturating when in the upright position. Eventually he could only pass urine when leaning forward with his legs astride in and a crouching position. The man experienced a sensation which he interpreted as being due to the movement of the bullet in the bladder. If he suddenly straightened himself during the act of micturition the stream was immediately cut off and the bladder could then only be emptied by lying on his stomach to "move the bullet from the bladder outlet," as he intuitively expressed it. He had a constant desire to pass urine, and the difficulty in the act gradually increased until it culminated in an attack of retention. The doctor who passed a silver catheter told the patient that he felt it come in contact with something solid at the base of the bladder. This was the only occasion on which it was necessary to use a catheter. It gave the patient considerable relief, and on Feb. 6th he rejoined his regiment and was put on light duty. Some difficulty in micturating was still experienced, and after about a month of light duty he noticed a swelling in connexion with the left testicle. This swelling was painful and tender, but as it periodically subsided he did not report sick until about the middle of March. The trouble was then temporarily relieved with the aid of a suspensory bandage, but it gradually returned, and on March 23rd he was sent to hospital. The man was well nourished and without any constitutional symptoms. His left testicle was very much swollen and presented the features of a subsiding epididymitis. The wound in the buttock was perfectly healed and gave him no trouble, and there was no sign of involvement of the nerves of the right leg. There was a little pus in the urine. Rectal examination did not disclose any abnormality, but X ray examination showed a shrapnel bullet in the middle line just above the pubes. Unfortunately no investigation was made with a view of demonstrating the mobility of the foreign body. The man was kept at rest until the epididymitis almost completely subsided. On April 16th, under general anæsthesia, it was intended to examine the interior of the bladder with the cystoscope, but by an unfortunate mischance the instrument went out of order and could not be immediately replaced. With a bladder sound the foreign body was easily felt but with a decidedly leaden "click." The bladder was there and then opened suprapubically and the bullet removed by my friend Captain Wade, who was working with me at the time. There was no other foreign body in the bladder, but in view of the septic condition of the urine a drainage-tube was introduced instead of closing the bladder by suture. The man made a very good immediate recovery, the tube was removed at the end of a week, and by the end of a fortnight urine was passed naturally, the wound rapidly healing by granulation afterwards. From the time that he first began to micturate he complained of some frequency and pain but this gradually diminished. Owing to the serious illness of his wife he had to leave hospital on June 10th before a cystoscopic examination had been made. By this time he was very well, though he still made some complaint of urinary irritability and the affected testicle remained tender. The foreign body was an ordinary shrapnel bullet perfectly spherical and covered with a thin layer of phosphates.

Shortly afterwards another patient came under my care having been sent home with an unhealed wound over the appendix region. This lad gave the following history:—

CASE 2. *A piece of shell-casing which was voided with the urine and became impacted in the urethra.*—Lance-Corporal ——, aged 21. When in the trenches at 3 o'clock in the afternoon a shell burst near him and he was struck in the right buttock and calf by the fragments. Both legs felt very numb, but he was able to walk down the trench and about 9 o'clock was taken to the nearest dressing-station and eventually to ——. From the first he had trouble with his urine and could only pass a drop or two at a time, but he did not notice any blood. The difficulty soon diminished, but micturition continued to be frequent and scanty. Soon after the casualty he began to vomit, and this continued for ten days. He was evidently very ill, for the abdomen was tender and swollen. He was thought to be suffering from appendicitis, and an incision was made through the lower part of the right rectus muscle, but I was unable to ascertain what were the conditions found. After the operation his symptoms improved, but he still suffered from urinary irritability, and about the third day urine began to flow from the wound in the buttock, and a catheter was accordingly tied into the bladder. After this the leakage of urine very much diminished, and by the end of the week it had ceased unless the catheter became blocked. During this period he had an attack of hæmaturia lasting about a quarter of an hour. At the end of a month the catheter was removed, and he then passed urine without pain, but frequently and in small quantities. On the third day after removal of the catheter the stream suddenly stopped and he felt as if something sharp was passing along the penis. Soon afterwards a hard foreign body became impacted in the meatus and could only be removed under anæsthesia. It turned out to be an irregular piece of shell-casing, approximately ¼ inch long by about a ¼ inch across. After this incident the patient was practically all right except that micturition continued to be a little frequent.

CASE 3. *Perforating gunshot wound of the pelvis followed by the impaction of a sequestrum in the urethra.*—Private ——, aged 26, was wounded at the battle of —— on Sept. 14th, 1914. The bullet entered the left buttock and apparently passed through the bladder to the wound of exit in the right inguinal region. He was in hospital in —— for ten weeks, during which time urine escaped from the wound, necessitating continuous drainage of the bladder by catheter. On Nov. 30th he was transferred to hospital in England. By this time he was micturating naturally, but after an operation urine again escaped from the wound, requiring the continuous use of the catheter. By Jan. 26th, 1915, he was sufficiently well to be sent to a convalescent home, but the wound was still unhealed and urine occasionally escaped from it. In the beginning of March he was granted furlough, but on April 15th he reported at his depôt as the wound was not quite healed though there was no leakage of urine. About the middle of May he noticed a white discharge from the urethra for the first time. It was independent of micturition, and was associated with pain along the urethra and at the end of the penis during the act of voiding urine. On one occasion he noticed a little blood just as he finished emptying the bladder. When he reported this new trouble it was diagnosed as gonorrhœa. In the course of a few days a swelling appeared on the upper surface of the penis near the glans, but it gradually disappeared without incident. On June 26th he was transferred to the venereal section of the hospital. He then complained of a hard swelling at the end of the penis, which was found to be a piece of bone, 1½ inches long, lying in the urethra. There was a profuse purulent discharge but no gonococci were found. Under anæsthesia the bone was removed, though it crumbled a little in the grasp of the forceps. Within the next few days two further small spicules were extruded and were followed by the disappearance of the discharge.

For permission to quote this case I am indebted to Lieutenant-Colonel R. A. Bolam, and for the notes to Captain Hodgson. In these cases the foreign body had presumably lodged in the bladder at the time of the casualty, for in each instance there was some urinary trouble from the outset. The lodgment of a missile in the bladder is an event well recognised in all campaigns. In most museums there are specimens of calculi in which the nucleus is formed by some type of bullet. Guthrie in his "Commentaries" quotes a case, and readers will recall how the specimen surreptitiously disappeared from his lecture table to his great disgust and chagrin.

The cases I have recorded are of much interest because they all show how a careful consideration of the history was alone sufficient to enable the diagnosis to be made. When there is any suspicion of the kind the patient's story deserves careful consideration. In the X ray investigation of such

cases pictures should be made with the patient in various positions and with the bladder empty and distended. Marked alteration in the position of the shadow will then be a guide as to the freedom of the foreign body in the viscus. A routine cystoscopic examination ought also to be carried out, for there may be some non-metallic foreign body in addition to that shown by the X rays, or the foreign body may be entirely non-metallic, and a negative X ray examination is therefore not enough to establish the diagnosis. It is interesting to observe how the wound in the bladder spontaneously closes.

Small foreign bodies always tend to escape with the urine, but those that cannot negotiate the urethra may sometimes be safely removed in the eye of an evacuating catheter. M. Legueu, using a specially modified lithotrite, has removed rifle and machine-gun bullets per urethram rapidly and without general anæsthesia.[1]

For shrapnel bullets, large or ragged fragments of shell, or encrusted foreign bodies the suprapubic route ought to be the operation of choice, and will certainly be the safest in the hands of those without special experience.

The next case illustrates the tendency of foreign bodies to ultimately find their way into body cavities. In the days when thick silk ligatures were used to tie the pedicles of ovarian tumours it was common to have them ulcerate into the bladder, where they frequently formed the nuclei of phosphatic calculi. The literature of those unfortunate cases where foreign bodies have unhappily been left in the abdomen after operations contains instances of both clips and mops which have subsequently found their way into various parts of the bowel, and on some few occasions have fortuitously been passed *per vias naturales*.

CASE 4. *Shrapnel bullet which ulcerated into the pharynx and was subsequently passed per anum.*—I saw a young officer who said that he had been wounded by a shrapnel bullet which entered just at the angle of the jaw on the left side and lodged somewhere on the right side of the neck. A few hours later, after X ray examination, an operation was carried out with the object of finding the bullet, but after a prolonged and fruitless search it had to be given up. Breathing was so much embarrassed as to necessitate tracheotomy. From the time of the operation he had increasing difficulty in swallowing, but he made no complaint as he feared another operation. About a fortnight later, when the trouble was particularly bad, he was about to drop off to sleep when he gave a gulp, and at once felt that he had swallowed something solid. The dysphagia immediately disappeared and did not return, and two days later the bullet was recovered from his evacuations. The jeweller's art converted the souvenir into an ornament worthy of adorning the neck of his fond and thankful parent.

At the time of my leaving home I was watching with interest the case of a man who was wounded in the sacral region by a bursting shell. The rectum was torn, leading to a large fæcal fistula. After some time he began to develop symptoms of urinary irritability. On examination with the cystoscope I found a well-marked basal cystitis most marked around a point at the upper limit of the trigone. Just opposite this area a hard mass could be felt per rectum evidently embedded in the bladder wall just above the prostate, and its metallic nature was confirmed by X ray examination. In this case I believe that the foreign body was gradually ulcerating into the bladder and expect that it would ultimately safely reach the interior of the viscus. At that time I did not advise any attempt at removal because I considered that there would have been much more risk of establishing a recto-vesical fistula than if the task was left to nature, for in the slow process of extrusion which she adopts ulceration and repair go hand in hand. Further, the size of the fragment suggested that in all probability it would ultimately be safely passed per urethram.

[1] THE LANCET, Nov. 27th, 1915, p. 1209.

THE RÖNTGEN SOCIETY.—It is proposed to conclude the session in June with an exhibition of apparatus employed in radiography, radio-therapy, including radium technique, electro-medical appliances and photographic apparatus to illustrate technique as applied to medical science. The society considers that it would be extremely useful if at the present time it could exhibit a complete X ray outfit with the most approved appliances for protection embodied. Members willing to assist in this exhibition are requested to communicate with the Honorary Secretary, Institution of Electrical Engineers, Victoria Embankment, London, W.C.

ULCERATIVE STOMATITIS.

BY KENNETH GOADBY, L.R.C.P. LOND., M.R.C.S., D.P.H. CANTAB.,

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(*Report to the Medical Research Committee.*)

Ulcerative stomatitis, often preceded by or accompanied with sore throat, is appearing sporadically among the troops in France as well as in some of the English camps. The disease is characterised by gradual onset of general malaise, red congested fauces, and acute inflammation of the gum margins; mastication and deglutition are painful, the cervical lymphatic glands are enlarged, and the tongue is furred and the breath fœtid. So pronounced is the last-named symptom that the term "fœtid stomatitis" is often applied to the disease. In the course of two or three days the inflamed gum edges become necrotic and a white false membrane may develop on the throat (Vincent's angina); the removal of this membrane leaves a raw bleeding surface. The necrotic process may spread to the cheeks, producing painful ulcers covered with a white tenacious membrane; the slough if removed with a swab or forceps leaves a raw, bleeding, acutely painful surface. The disease rarely progresses to perforation of the cheek or necrosis of the jaw in adults, but in children may be followed by deep sloughing of the mucous membrane and necrosis of the jaw. The sequestrum may include one or more of the permanent teeth. Rarely necrosis of the alveolar plate of bone occurs in adults, the teeth becoming loose and finally exfoliating.

The constitutional symptoms may be a severe chill followed by a rise of temperature (102° F., 103° being not uncommon), and the patient feels acutely ill, often out of all proportion to the objective symptoms; he looks "toxic" with yellowish greasy skin and a curious reddish-yellow complexion, often persisting after the acute local symptoms have subsided. Occasionally, mainly in children, the temperature becomes subnormal, always a symptom of grave import. Diarrhœa may be present. The pulse is rapid and small, the urine is concentrated, and frontal headache is usually complained of. There is frequently severe "neuralgia" (visceral referred pain) referred to one or other of the "neuralgic areas" corresponding to the portion of the mouth affected.

A smear preparation made from the gums, cheeks, or throat, and stained by Giemsa's method shows innumerable bacteria of two morphological forms: (1) bacillus fusiformis, and (2) spirochætes. Both are Gram-negative. Stained by Leishman's stain or Giemsa the fusiform bacilli are seen to be diplobacilli 6–7μ in length, with pointed extremities; the thickened ends are in apposition with a small clear area between, somewhat resembling the sheath form of the bacillus diphtheriæ. The organism is longer and larger than the diphtheria bacillus and is slightly curved; plasmolysis is common. The second or spirillum form closely resembles the spirillum of relapsing fever as seen in blood films; it is wavy in outline, irregular in form, and without the characteristic regular "screw" form seen in spirochæta pallida. Many of the organisms show unmistakable spiral form; the "turns" of the thread are but four to six in number, the ends may be pointed, but the organism is usually about the same diameter throughout; in hanging-drop preparations from the tissue it is not motile. These spirochætal forms are variously stated to be: (*a*) spirochætes and an entirely distinct species from the bacillus fusiformis (Muhlens and Hartmann,[1] Ellermann,[2] Leukowicz[3]); (*b*) a pleomorphic form of the bacillus fusiformis (Vincent,[4] Tunnicliffe,[5] &c.). Considerable divergence of opinion exists on this point, but as anaerobic bacteria are notoriously difficult to separate in pure culture, the question of mixed colonies may well prove a complicating factor. The organism is an obligatory anaerobe and is also serophile.

[1] Muhlens and Hartmann: Zeit. für Hygiene und Infections-Krankheiten, 1906, Band lv., p. 81.
[2] Cent. für Bak., Orig., 1904, Band xxxvii., 729.
[3] Ibid., Band xli., p. 154, &c.
[4] Ann. de l'Institut Pasteur, 1895, p. 660.
[5] Journal of Infectious Disease, 1906, vol. i., p. 147.

Sections made of the gum tissue infected by the B. fusiformis show deep penetration by both the fusiformis bacillus and the thread or spirochætal form, the latter being found in the deeper parts of the tissue. There is little tissue reaction, and the smear preparations show practically no positive chemiotaxis, and very few, if any, polymorphonuclear leucocytes are found in the "membrane," which is composed of necrotic tissue—in fact, the whole character is a tissue necrosis. Generally a small number of Gram-positive diplococci (pneumococci) are to be found mixed with the other organisms; they are only found with difficulty microscopically, and are few compared with the enormous number of fusiformis bacilli and spirochætes; they are of importance in the production of secondary infection. The B. fusiformis is not peculiar to throat and mouth affections. It has been found as the chief organism present in gangrenous appendicitis (Ghon and Mucha[6] and Kaspar and Kern,[7] and Hyde[8] in eight cases out of 102 examined), in cerebral abscess (Dick,[9] Ghon and Mucha[10]), in metastatic abscess of femur (Silberschmidt[11]), in hospital gangrene (Vincent, Coyon[12]), in abscess of lung and empyema (Dick[13]), in a hand infection (Peters[14]). It has been isolated from the blood in a case of severe mouth infection (Larson and Moses,[15] Buron). I have myself isolated the organism from two compound comminuted fractures, one of the humerus, the other of the femur, due to gunshot wounds; from cases of bronchiectasis, and from necrotic ulceration of the large bowel.

The outstanding clinical symptom of B. fusiformis infection is the characteristic evil smell typically associated with fœtid bronchitis and bronchiectasis. The pathogenicity of the B. fusiformis is affirmed by some and denied by others; thus Tunnicliffe, and Muhlens and Hartmann found that the injection of pure cultures into guinea-pigs and rabbits was only occasionally followed by a small abscess at the point of injection, but that no general symptoms and no characteristic necrosis of the skin took place. On the other hand, Leukowicz found toxæmia in laboratory animals, commencing 36 hours after injection, and he further states that injection of pure cultures into the gums of healthy children produced no effect. Many observers have induced local tissue necrosis and gangrene by inoculating animals with pus or triturated necrotic tissue containing B. fusiformis, yet pure cultures have rarely caused more than temporary local swelling. Veszpremi,[16] however, succeeded in raising the virulence of the organism by successive passages through rabbits; gangrene was not caused in the earlier animals of the series, a local abscess only being formed, but after the fourth or fifth passage tissue gangrene followed injection of cultures isolated from the previous animal of the series.

Several outbreaks of ulcerative stomatitis are recorded among troops on active service. Thus in the Philippines a large number of cases occurred among the United States troops, in the South African War many isolated cases were seen, and at Standerton an epidemic occurred among the sanitary corps,[17] which was at first thought to be scurvy. An epidemic among the Chinese Coolies in the Johannesburg mines was also reported by Walker in the *Johannesburg Medical Journal*, and frequent mild epidemics are common among the native prisoners in the gaols in India. There is some indication that the disease is most often seen in this country among underfed children. Dogs when fed upon putrid meat develop generalised inflammation of the gums (Harley), and it is possible that constant inhalation of air tainted with putrid carcases may have a predisposing effect. Guinea-pigs fed upon groats only, without green food, ultimately develop generalised scorbutic symptoms, but before hæmorrhages are noted the teeth become loose and inflammation of the gums and general loosening of the teeth take place, usually in three to four weeks; the gingival tissues may become ulcerated. In one series of 20 guinea-pigs, which I fed upon groats and water only, four developed gangrenous gums. The etiology of the disease in man is obscure. Pre-existing chronic disease of the soft tissues of the mouth, especially pyorrhœa alveolaris, is undoubtedly an etiological factor, but is not present in every case. Infection from other cases may be a possible cause, but so far there is no evidence to support the view.

Ulcerative stomatitis may follow tooth extraction in a limited number of cases, when chronic suppuration has pre-existed, as, for instance, an impacted third molar. I have also seen several cases following the injection of local anæsthetics for tooth extraction. In every case the anæsthetic used was novocaine, the action of the adrenalin together with the trauma lowering the vitality of the tissues sufficiently to allow the gangrenous process to develop.

None of the recent cases seen from France suggest scurvy in appearance, and the similarity of the Standerton outbreak, already referred to, with the conditions under which the cases had been living, are suggestive that putrefactive emanations, or more probably actual contact with earth containing putrefactive material, may be an etiological factor.

Treatment.

The organisms found in such profusion in the disease are obligatory anaerobes and will only grow if the medium also contains a suitable proportion of normal serum, a biological factor suggesting the use of lotions containing peroxide of hydrogen. On the other hand, the necrotic tissue once formed presents an almost impervious barrier to the action of most antiseptics, and in practice hydrogen peroxide does not give the best results; further, simple lavage of the mouth is insufficient and actual swabbing of the affected areas is always necessary.

Dilute chromic acid relieves the pain and promotes the removal of the necrotic tissue best. It should be used warm, diluted 1 in 200 to 1 in 400, and applied to the affected areas with a swab of cotton-wool wound round a probe, frequent rinsings with the lotion being also employed. Immediately after the use of the chromic lotion the affected area should be painted with a mixture of 20 grains of chloretone to the ounce of equal parts glycerine and spirit. Cocaine, 10 grains, and salol, 30 grains to the ounce, may be used if chloretone is not available. Any loose sloughs should be gently removed with the swab if partially detached, but due care must be exercised, otherwise the raw surface left is more painful than before. Hot fomentations should be applied frequently to the exterior of the jaws; there is little or no danger of suppuration of the cervical lymphatics following their use, and the relief is considerable, especially if referred pain exists.

Potassium chlorate, 10 to 15 grains, with perchloride of iron and magnesium sulphate, should be given internally, and the diet should be restricted to fluids or semi-solids, great care being observed that the mouth is efficiently cleansed after each meal. This is best effected by irrigation with a Higginson's syringe. It is inadvisable to perform any tooth extraction until the necrotic process is in abeyance, otherwise there is risk of increasing the local disease as well as a possibility of recurrent or secondary hæmorrhage. In two out of four fatal cases secondary hæmorrhage was the cause of death, one being a case of trypanosomiasis; the other two fatal cases developed septic broncho-pneumonia, also following tooth extraction.

The disease commonly yields easily to the above treatment, but chronic inflammation may persist and degenerate into pyorrhœa alveolaris with final loss of all the teeth. The interdental bone and both alveolar plates may be so affected by the original acute necrotic process that much of the root of individual teeth is laid bare; such cases, if not carefully treated, recur and invariably degenerate into chronic suppuration with alveolar porosis.

Vaccine treatment is indicated in the chronic stages especially, and in those cases showing secondary pneumococcal infection. I have also employed vaccine therapy successfully in the acute stages, using the B. fusiformis; it is not usually possible to treat with an autogenous antigen of this organism, owing to its slow growth even under strict anaerobic conditions and other difficulties attendant on the cultivation of all anaerobes. The anæmia and toxæmia of the severe and moderately severe cases are often difficult to combat, may remain for several weeks and even months, and are liable to recurrence.

Iron and quinine, fresh air, plain food, and no alcohol are indicated. Vaccines should always be tried. For three or four months subsequent to the attack special attention to the gums and teeth is essential. Any source of irritation, such as accumulations of tartar, irregular fillings, and carious teeth, should have proper dental attention, and

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[6] Cent. für Bak., 1909, Band xlix., p. 493.
[7] Ibid., 1910, Band lv., p. 97. [8] Zeit. für K. Chir., 1911.
[9] Journal of Infectious Disease, vol. xii., 1913, p. 190.
[10] Loc. cit. [11] Cent. für Bak., Band xxx., p. 159. [12] Loc. cit.
[13] Journal of Infectious Disease, 1913, vol. xii., p. 190.
[14] Ibid., 1911, vol. viii., p. 455. [15] Ibid., 1913, vol. xiii., p. 433.
[16] Cent. für Bak., Band xliv., p. 656.
[17] Myer Coplans, Jour. Epid. Soc., 1914.

the patient should be instructed to carry out a careful dental toilet, daily irrigating the interdental spaces until the tissues have recovered their tone.

Diagnosis.

As regards the diagnosis of the condition, few difficulties are to be met with.

Scurvy, the disease with which ulcerative stomatitis is usually confounded, presents hypertrophied gums often entirely covering the teeth; the swollen gums bleed easily when touched. I have not seen petechial or periosteal hæmorrhage in ulcerative stomatitis. The fœtor of the breath in the two diseases is similar.

Pyorrhœa alveolaris is a more chronic condition. The teeth may or may not be loose, pus is present, welling up from the gum margins on pressure, necrotic patches may occasionally occur, but there is never the same tissue necrosis of large areas. The gums in pyorrhœa alveolaris may be hypertrophied but not to the same extent as in scurvy, and as a general rule no pain exists and the disease is generally discovered accidentally.

Pneumococcal ulceration of the gums and mouth is rare, and is characterised by a curious irregular mammillate roughening of the affected parts with small depressed ulcerating patches, but without tissue necrosis.

Lymphatic leukæmia may be associated with hypertrophic gingivitis, but no ulceration; the hypertrophied tissue is firm and less liable to bleed than in scurvy.

The white necrotic gums, the pain, and above all the examination of smear preparations will at once settle the diagnosis. When the throat is affected, diphtheria is closely simulated, and the Klebs-Löffler bacillus may occur, associated with the B. fusiformis (Priestley).[15] Bacteriological diagnosis alone will determine this.

Harley-street, W.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF DERMATOLOGY.

The Rationale and Practice of Chemotherapy.

A MEETING of this section was held on April 13th, Dr. J. H. STOWERS, the President, being in the chair.

Mr. J. E. R. MCDONAGH read a paper on the Rationale and Practice of Chemotherapy, in which he enumerated the links in the chain of his research into syphilis. He criticised certain of Ehrlich's theories, and pointed out that late cases of syphilis, which were scarcely benefited by salvarsan, were improved at once by intramine, while in all cases the combination of ferrivine and intramine gave the most satisfactory results.

Professor W. M. BAYLISS criticised Mr. McDonagh's theories severely, finding much in the physico-chemical hypothesis which conveyed no very definite meaning to him. He thought it unfortunate that the phenomena of oxidation and reduction should form the basis of the main thesis, as their mechanism in the living cell was extremely obscure. While expressing doubts as to the validity of the theoretical basis of Mr. McDonagh's treatment of syphilis, he added that its possible practical value would not necessarily be detracted from.

Dr. C. H. BROWNING thought that it was unfortunate that Mr. McDonagh had passed such strictures on the work of Ehrlich. It was clear from some of the latest work of this author that he had not confined his attention solely to the arsenical salts. Dr. Browning did not consider that the theories advanced by Mr. McDonagh would go far towards clearing up this complex subject, but he did not think that this need affect the value of the therapeutic observations made. He was much interested in the new therapeutic application of an organic sulphur compound which had been prepared for the first time many years previously, and he thought that to be able to clear up a disease like interstitial keratitis by an injection of this drug was an achievement of the first magnitude.

[15] Public Health, February, 1906.

Dr. F. H. TEALE asked Mr. McDonagh what evidence he had that his so-called phases of the "leucocytozoon" of syphilis consisted mainly of lipoid-globulin molecules. He pointed out that lipoids only formed loose combinations with proteins and that therefore only loose chemical compounds, and not molecules, result from this combination. There was experimental evidence that an antigen could be completely deprived of its lipoid constituents and the resulting antibody production be in every way the same as if the native antigen had been used.

Mr. J. WARD expressed the view that the theory of oxidation and reduction met many of the phenomena which had hitherto remained enigmas. It would explain why iron and copper had a beneficial therapeutic action. Mr. McDonagh's statement that iodine acted as a reducing agent commended itself to him, as it made clear the action of colloidal iodine in rheumatism.

Sir MALCOLM MORRIS was of the opinion that it should be definitely decided as soon as possible whether the drugs referred to had advantages which rendered their general use necessary or not. This was not the moment when there should be a difference of opinion in the profession as to the best drugs to be employed for combating a disease which was rapidly increasing.

Lieutenant-Colonel L. W. HARRISON stated that the few injections of intramine which he had prescribed had caused considerable pain, and that it was as bad as that obtained with the original salvarsan.

Captain C. H. MILLS agreed with the last speaker as to the pain caused by intramine.

Mr. MCDONAGH replied.

MEDICAL SOCIETY OF LONDON.

Shakespeare and Medicine.

A MEETING of this society was held on May 1st, Lieutenant-Colonel WILLIAM PASTEUR, the President, being in the chair.

Sir STCLAIR THOMSON delivered the Annual Oration entitled "Shakespeare and Medicine." In the course of his oration, he said that in this tercentenary commemoration it was surely very right that our profession should pay its tribute of recognition to our greatest genius, for, after the great poetical subjects of love, hate, ambition, and war, there were probably no matters so frequently dealt with by Shakespeare as those in which the medical profession were concerned. There was a special reason why the Medical Society of London should take a particular interest in the most many-sided man the world had ever known, for its library contained the only authentic record of his death. This was found in the Commonplace Book of the Revd. John Ward, Vicar of Stratford-on-Avon, commenced 32 years after the poet's death. In one of the 16 duodecimo volumes of this work appeared the following entry: "Shakespear, Drayton, and Ben Jhonson had a merry meeting and it seems drank too hard for Shakespear died of a feavour there contracted." There was no need to surmise that Shakespeare actually studied medicine, but there was abundant material to show that he had a knowledge and comprehension of it that was simply marvellous. We could appreciate and enjoy and benefit by all that poets have seen and written without attributing to them prophetic or superhuman powers. So with the medical references in Shakespeare, the science of his medicine was decidedly of his own period, and, like all science, it had moved forward. His profound knowledge of human life and human nature remained, and explained why he is and must always be one of our greatest masters of medicine. The mere references to various diseases, symptoms, drugs, and so forth, need not be collected as remarkable evidence of the great poet's medical knowledge or insight. Sir StClair Thomson said he would refer to such matters and to his knowledge of contemporary medicine very briefly, and give more consideration to his astonishing acuteness of observation, his familiarity with the ways and thoughts of frail humanity, his discrimination of disease according to age, sex, and circumstances, his sensitive regard for our "brittle life," his sweet reasonableness and deep human sympathy, and his profound knowledge of that part of physiology and pathology which might be studied in the daily life of the street, the market, the tavern, the court, the camp, or the town. These were

subject to no errors of investigation; they were eternally true. The whole gamut of human life was epitomised by the humorously melancholy Jacques in 28 pregnant lines. Brief reference was then made to the state of medicine in the sixteenth century, and it was pointed out that Shakespeare, by the marriage of his eldest daughter Susanna, with Dr. John Hall, of Stratford, had plentiful opportunities for becoming acquainted with the life and ways of thought of a medical man and for picking up a fairly intimate knowledge of the practice of medicine 300 years ago. Out of 36 plays medical characters were represented six times: (1) Dr. Caius in the *Merry Wives of Windsor;* (2) an English doctor and (3) a Scottish doctor in *Macbeth;* (4) Dr. Butts in *Henry VIII.;* (5) Cornelius in *Cymbeline;* and (6) the physician in *King Lear.* No character represented a surgeon. Dr. Caius was treated more as a figure of fun than as a regular physician, and it was probable that Shakespeare meant to represent a quack and not the learned Dr. Caius. Dr. Cornelius was possibly suggested by that famous physician of Charles V., and simply adapted for dramatic purposes. The Dr. Butts represented in the fifth Act of *Henry VIII.* was no doubt Dr. William Butts, Fellow of Gonville Hall, Cambridge, and of the College of Physicians, who lies buried in Fulham church. Cornelius played with honour and astuteness a difficult part when the Queen asked him for poison, and the physician of King Lear played his part well and sympathetically. Cerimon in *Pericles* was both a physician and a nobleman, so that the good social status of the medical man was here accepted and illustrated. No nobler panegyric of our profession could be written than that put in the mouth of Cerimon. Quacks, who flourished abundantly in the period, were portrayed in several plays. Among such characters were Pinch, Friar Lawrence, and Helena. Quacks and medical mountebanks were found in the earlier plays, and the first practitioner of medicine for whom Shakespeare did not entertain contempt was the physician in *King Lear*, which was written about 1606, the year before the poet's daughter married Dr. Hall. Shakespeare showed an astonishing familiarity with many purely professional or technical matters, and manifested an intimate knowledge of the history of medicine. He employed medical terms which no ordinary playwright would know how to introduce. The diseases most frequently referred to were ague, rheumatism, plagues, pestilence, fever, measles, the sweat, and leprosy, but casual mention was made of many others. Their mere mention was of no moment; what should give us pause were the frequent flashes of genius which were revealed by the insight sometimes given of the appearances, character, and progress of the disease or of the patient. That the poet should so often ascribe mental characteristics to pathological states was surprising, considering the age in which he lived. By quotations Sir StClair Thomson illustrated Shakespeare's acquaintance with a deposit of lithates, the treatment of the *embonpoint* of success, digestion, chlorosis, goitre, epilepsy, crisis, and the well-known tests of life. A large number of herbs and drugs and of their preparations were mentioned by Shakespeare. What was of more striking and general interest was the evidence of the remarkably wise and reasonable views which Shakespeare manifested on the subjects of treatment, diet, and hygiene. He did not overestimate the help of medicine, and indicated the *vis medicatrix naturæ*. He justified the custom of medical note-taking. Music as a remedy especially in mental states he frequently mentioned. Shakespeare's medicine reflected that of the period, for in his plays were found the doctrines held at that time. Such were the belief that our bodies consist of four elements—fire, air, earth, and water; the doctrine of humours; the belief that plants possessed peculiar powers if plucked at night and during particular phases of the moon; the old beliefs in the influence of the planets on disease, and of the moon on the mind; and that toothache is caused by a humour or a worm. Even the quackery of his age was reflected in his pages—e.g., that of water casting. He was well acquainted with blood-letting—the practice of the period—and made frequent reference to the blood and circulation, though in the latter he naturally reflected the view which preceded Harvey's theory. Shakespeare's knowledge of the voice, consumption, air and climate, syphilis, cancer, obstetrics, public health, mental diseases, surgery, and vivisection was illustrated by many quotations. His deep sympathy with the tragedy of suffering shone out from every page of his plays. In his concluding section Sir StClair Thomson demonstrated the insight which the poet had into the influence of sympathy upon the patient, the relationship between hope and prognosis, the value of mirth and distraction, the virtues and evils of alcohol, the advantages and effects of abstinence, the horrors of insomnia and the benefits of sleep, the characteristics of our "sad humanity" as it falls into "the sere, the yellow leaf," and finally into the attributes of death. Shakespeare's plays would be read by physicians when every medical treatise of the present year would have been completely eclipsed, and they would continue to be studied by future generations until "there shall be no more death, neither sorrow nor crying, neither shall there be any more pain."

Sir SIDNEY LEE, in proposing a vote of thanks to the orator, congratulated him on making a notable contribution to the celebration of the tercentenary.

Mr. D'ARCY POWER, who seconded, said that the imperfect writing in the poet's autograph suggested to him the effect of disease rather than of illiteracy, as some supposed.

The vote having been passed with acclamation, the meeting was adjourned.

There were displayed many exhibits which were related to Shakespeare and his time. These included some from the Wellcome Historical Medical Museum, comprising materia medica mentioned in his plays, prints of medical men of the period, engraved portraits of Shakespeare, his house at Stratford-on-Avon, the Globe Theatre, and of a copy of the bust above his tomb, an enlarged photograph of a London apothecaries' shop of the period, oil paintings of a urine caster and of blood-letting, portraits in oils of Sir William Butts and of Dr. Caius, two London Delft pots used in Shakespeare's time, and a touch piece and proclamation used in connexion with the royal cure of the King's Evil. A selection of medical and surgical works from the library of the society, augmented by loans from the libraries of Dr. Lloyd Roberts, Dr. A. F. Voelcker, and Mr. D'Arcy Power, and from the Historical Medical Museum was also on view. Other exhibits were a cross made from Shakespeare's crab tree, lent by Mr. D'Arcy Power, an unknown portrait of Shakespeare lent by Dr. de Havilland Hall, medicine jars lent by Dr. Mitchell Bruce, and bookplates of the Shakespeare Memorial Library from the collection of Mr. Bethell.

HARVEIAN SOCIETY OF LONDON.—At the meeting of the Harveian Society held on April 13th a paper was read by Dr. F. J. McCann on "Backward Displacements of the Uterus." In discussing the causes of the condition the speaker said that he was convinced that trauma sometimes played a part. He was of opinion that symptoms occurred in nearly all cases of backward displacement sooner or later, and therefore advised that treatment should be carried out in the early stages. The congestion of many displaced uteri he regarded as being due to torsion of the broad ligaments rather than a nipping of the uterus by the utero-sacral ligaments. Replacement of the uterus by a sound was condemned and the breaking down of adhesions without the aid of sight deprecated. Operation was recommended in preference to pessary treatment in the case of virgins and in the majority of other cases. General treatment, such as massage and exercises, was emphasised. In discussing operative treatment the interesting fact was mentioned that 100 different operations had been devised for the condition. The suitability of the different operations under different conditions of age, possibility of childbearing, &c., were discussed. The "sling operation" was said to be contra-indicated when varicose veins were present in the broad ligament. Dr. McCann described two operations on the round ligament which he had devised and used with success.—In the discussion which followed Dr. T. G. Stevens said that he was of opinion that congenital cases were very common, but as a rule caused no symptoms.

NEW INFIRMARY FOR ARBROATH.—The new Arbroath Infirmary buildings were formally opened on April 22nd. The total cost amounted to £14,693, and at the opening the institution was free from debt.

THE LANCET.

LONDON: SATURDAY, MAY 6, 1916.

The Supply of Medical Men for the Services.

WE publish in another column a letter from Sir CLIFFORD ALLBUTT and Sir WILLIAM OSLER urging the need for further medical officers with the fighting forces, and pointing out, as we ourselves have done on many previous occasions, the advantage of widespread enrolment because in this way a large measure of equality of service and sacrifice may be obtained. The views of Sir CLIFFORD ALLBUTT and Sir WILLIAM OSLER are those which we have already asked our readers to accept. When once the opportunity of conscription, with its genuine distribution of burdens, was let slip, voluntary enrolment remained the only alternative to some system of compulsion, and while its fairness depends obviously upon the acceptance by medical men of voluntary service as a general principle, its advantage of a limited sojourn with the colours can hardly be gainsaid. The member of any other profession than the medical, on receiving a commission, joins the services for the duration of the war, as the Territorial medical officer does; the medical man who voluntarily enrols is allowed to put a term to his period of service, and to do this without the intervention of a lay tribunal.

The letter from Sir CLIFFORD ALLBUTT and Sir WILLIAM OSLER receives reinforcement from a statement issued by the Central Medical War Committee on the authority of the Director-General of the Army Medical Service. The statement is that a considerable number of medical men are required immediately for service in the Royal Army Medical Corps, as a large proportion of those officers who hitherto have been serving in this country have been detailed for service abroad. This can hardly come as a surprise to anyone who has watched the recent developments of military operations, and it is of good omen that the new plans should to some extent have got ahead of the suggested calendar. But the difficulty of this situation for the Central Medical War Committee is that the enrolment of medical men of military age by the Committee is not yet complete. It is clear that medical officers must be ready to meet the future demands immediately to be made, and to take the places of those who have been moved forward, but the official requisition of medical officers has reached the Central Medical War Committee before the scheme of voluntary enrolment had finished its work. The Central Medical War Committee decided that no call should be made on the medical men who had enrolled with the Committee unless and until 75 per cent. of the men of military age had signed the form of application for a commission. This percentage has not been obtained, although the work has been on the whole a success. In the teeth of criticism, some of which has been fair and well informed and some wholly unjust and childishly ignorant, the Committee has managed to secure for the army a large proportion of the number of officers required, but the deficit must now be made up by a general appeal to the whole constituency, regardless of whether the men are enrolled or not.

Amongst the enrolled, many have expressed their willingness to join the colours the moment they are required. These are the men who had it not been for the enrolment scheme would in many instances have applied directly to the War Office for a commission, and been lost to the medical arm. To them the Central Medical War Committee appeals, asking them to express their willingness to serve their country, without waiting for the pledge given by the Central Medical War Committee to be redeemed. Amongst the unenrolled there must be men willing to meet the demands of patriotism who have not fully understood the system of enrolment and have hitherto held back. Some of these men have been misled by categorical but incorrect statements to the effect that their services were not required by the army. So far from this being the case, the demands of the army are imperative. The extension of our front in various parts of the world, and the operations that are known to be imminent, will strain to the utmost our medical resources in the field. Compulsion looms in the future, but it is still possible for the medical profession to distinguish itself as that section of the community which has made the voluntary system a success. In the interest of the whole world this war must be finished quickly, and a complete medical service is absolutely necessary to the army. Doctors must be obtained immediately and in sufficient numbers. We trust that voluntary enrolment will meet the need, but the new Bill for compulsory service complicates the work of the Central Medical War Committee, and this body may require more complete recognition, as well as reinforcement, if its full value to the public and to the medical profession is to be utilised.

Infantile Mortality and the Nation's Future.

To increase our birth-rate and to save the lives of our children constitute the two principal means by which we can diminish to some extent the effect of the losses in men which we have suffered in the war, which we are still suffering daily, and which, before the war is over, must inevitably become very heavy. Neither task is beyond our powers. The birth-rate of a nation may fall owing to economic conditions associated with general lack of prosperity, but these conditions cannot be said to have prevailed with us in the years immediately preceding 1914. If there has been a decline in the rate due to a growing reluctance on the part of married persons to face parental responsibilities—and there seems to be good reason to believe that this has been the case—the influence

of a healthy public opinion may counteract a form of selfishness likely to prove disastrous to our national welfare. In the circumstances in which we now stand, it is to be hoped that consciousness of danger to the nation and a sense of patriotic duty may do their share in abolishing a state of affairs which was already disquieting before the slaughter of our sons on the battlefield demonstrated its danger and its folly.

The problem of how to save the lives of children actually "born into the world" is on a different footing. To allow them to die in thousands unnecessarily during the first year of existence amounts to national manslaughter. Manslaughter, because in the ordinary meaning of a word familiar to all, to kill by neglect is manslaughter. National, because Governmental effort and the trained energies of the nation can intervene with marked effect to prevent it; because, also, without such intervention matters must inevitably remain as they are or become worse. Those who have any doubt as to the possibility of saving infant life by interference from outside the family into which the child is born have only to read the Milroy lectures delivered before the Royal College of Physicians of London by Dr. S. G. MOORE, the medical officer of health of Huddersfield, and published in this and the two preceding issues of THE LANCET. It will there be seen that not only can the percentage of deaths among infants be diminished through the agency of interference where it is wisely exercised, but that the interference itself is welcomed by many mothers. A paragraph in Dr. MOORE'S third lecture will be found directly bearing upon this point and showing that visits by assistant medical officers, designed by the Huddersfield medical authority at first for poorer districts only, had to be extended owing to complaints, not that this or that baby had been visited improperly or unnecessarily, but that it had been passed over, whereas the infants of other parents had received attention. The importance of this lies in the fact that the goodwill of the mothers is essential to the working of the systematic life-saving rendered possible by the Notification of Births Act, 1915. Success will, however, only be assured where the medical profession, the municipal authorities, the parents, and the general public, whose funds the municipal authorities administer, are combined to attain a common object.

The essential lessons to be derived from Dr. MOORE'S lectures should inspire this unanimity of effort, for they show that measures specifically directed against infant mortality afford the only way to check it. No one denies the enormous value of modern municipal activity in the direction of improved sanitation and the supervision of articles of food, and in the provision of better housing accommodation for the poorer classes. Municipal activity, however, so far as infantile mortality is concerned, has been only relative, and it has been content to leave the death-rate among infants at a point which many persons in municipal life have learnt to regard as normal and inevitable, but which medical men have felt to be otherwise. Dr. MOORE, referring feelingly to the position of the medical practitioner in contemplating the loss of infant life, proves that combined effort, directed by medical men, can effect an improvement immediately, and in a degree that commands recognition. This is borne out not only by the examples which he gives from British statistics, but by the extraordinary story of Villiers-le-Duc related in his third lecture. Those who read the particulars in another page will see that a small French municipality some years ago established a record which competitors may emulate, but cannot hope to eclipse, having reduced the death-rate of its infants in the decennial period 1893–1903 to nil. This was done, it will be noted, by carefully planned regulations concentrated and enforced upon the mother and infant before and after birth. The municipal council of Villiers-le-Duc and its enlightened mayor seem indeed to have been able to exercise over the ostensibly private affairs of its inhabitants a patriarchal sway more comprehensive than that wielded by our civic authorities. They have, however, shown what in certain circumstances can be done, if only on a small scale, and the nature of the methods which lead to success. With us we have an Act of Parliament, passed in the midst of a devastating war, which gives powers to local authorities to alleviate a portion at least of the loss which is being inflicted. The agencies which exist or are being called into existence for the protection of mothers and infants are largely voluntary, incoördinate, and in need of authoritative guidance and control. At present they probably reach not more than a sixth of the total of the infants who need their aid. We have to learn and to teach that every mother and every infant has the right to receive adequate care, and we have little doubt that, as this is recognised, coördination and economical organisation will follow. Lukewarmness, indifference, and even opposition are likely to be met in some quarters. A few years ago we should have heard such epithets as "socialistic" and "grandmotherly" applied to the motives which inspired the Notification of Births Act, 1915, which frankly submits not only infant life but the pre-natal care of the mother as a matter for the consideration of local authorities. It is not, however, socialistic to arouse in mothers a keen sense of their individual duties towards themselves and their infants. And if "grandmotherly" be a term more literally applicable, it must be admitted that to guide a mother in the bearing and the rearing of her infant is perhaps the most useful function that a grandmother can perform.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.—A Comitia was held on April 27th, Dr. Frederick Taylor, the President, being in the chair. The following gentlemen having passed the required examination were admitted Members of the College: Dr. A. G. Anderson, Dr. R. Hill, Dr. W. MacAdam, and Dr. H. H. Scott. Licences to practise physic were granted to 99 gentlemen who had passed the requisite examinations. The following Members, on the recommendation of the Council, were elected Fellows of the College: Dr. M. G. Foster, Dr. J. M. H. MacLeod, Dr. H. L. McKisack, Dr. J. A. Arkwright, Dr. C. H. Miller, Dr. H. W. Wiltshire, Dr. C. E. Lakin, and Dr. E. A. Cockayne. After some further formal business the President dissolved the Comitia.

Annotations.

"Ne quid nimis."

MARGARINE AND BACTERIAL INFECTION

AMONGST fatty foods just now margarine has taken an important place in the dietary as a wholesome substitute for the more expensive butter. Before the war there was still a prejudice against this article of food, but this has now been practically removed; economic considerations have led a good many people to try margarine, and as the result of practical test it has been adopted in many households. "Bosh," the trade name first chosen for the substance, was not attractive, and the word margarine was employed, being derived from the Greek word for pearl, and adopted because of the pearly appearance of margaric acid. Under this name, however, the substance was for some time looked upon as an inferior butter substitute, the sale of which opened the way to fraud, and its use was confined to the kitchen. Whatever may have been the quality of margarine years ago there can be little doubt that its manufacture has undergone very great improvement, and the product of the present day is a triumph of the art of the refined blending of various fats, vegetable and animal, with milk. The introduction of nut and seed oils, made flavourless and neutral by cleansing processes, is a comparatively recent departure. Margarine was originally made with oleo oil or the fluid portion of beef fat, with but a trifling proportion of vegetable fat, while now there are vegetable butters sold which are made exclusively of nut oils. Generally speaking, it may be said that the higher grades contain much more animal fat than the lower grades, and this accounts for the two classes of margarine sold at very different prices, the former commanding practically twice the price of the latter. Perhaps the existence of high and low grades of margarine is responsible for the fact that a prejudice still exists against margarine in the public mind, for this is evident from certain statements which have found their way into the lay press, suggesting that margarine contains disease organisms derived from the milk with which it is blended. The suspicion is ill-founded. In the first place the cream is removed from the milk by a separator, and it is well known that with the removal of this cream a very large proportion of the bacteria is withdrawn, so that in this respect separated milk would contain far less bacteria than the full cream milk from which it is obtained. Next, the skim milk before it is blended with the fats and oils is at once pasteurised, heated, that is to say, to a temperature a little below its boiling point. These precautions are taken by the manufacturer himself in his own interest, as unless the milk is thoroughly clean and free from bacterial agencies there is a risk of the resulting product being unstable, unsound, and unpalatable. We should be surprised to find margarine absolutely free from organisms, but we should be equally astonished to find that it contained more organisms than butter. Facts all point to the reverse being the case.

HYDROPS TUBÆ PROFLUENS.

Dr. T. H. Llewellyn and Dr. T. B. Block have reported, in the *Journal of the American Medical Association* of April 1st, a case of the rare condition termed "hydrops tubæ profluens" or "intermittent hydrosalpinx." A stout woman, aged 33 years, came to hospital on Nov. 15th, 1915. She had been married 14 years, and had one child some years ago. Her periods were never regular; every other month the flow was profuse, and in the intervening months scanty. The last period was on Oct. 26th. The left tube had been removed four years previously. She complained of throbbing pains in the sacral and right ovarian regions, associated with a vaginal discharge. Two weeks previously whilst walking she felt a sharp stabbing pain in the right side and a sensation as though "something burst." A brownish vaginal discharge immediately followed and had persisted ever since. During the past two weeks she had a swelling in the right side of the abdomen. On examination the uterus was found slightly retroposed, mobile, and tender. In the left ovarian region induration and tenderness were detected. No mass was felt in the pelvis, but much importance was not attached to this fact as the patient was so stout. She returned every few days and frequently reported that she had attacks of sudden severe right-sided pain followed by a brownish vaginal discharge and disappearance of the pain. Hydrops tubæ profluens was diagnosed. Laparotomy showed that the left ovary was transformed into a follicular cyst about the size of a peach. The right tube was enlarged and contained fluid. Supravaginal hysterectomy, right salpingectomy, and left oöphorocystectomy were performed. Gentle pressure on the excised tube caused a flow of clear watery fluid from the ostium. Uneventful recovery followed. Intermittent hydrosalpinx seems to be due to closure of the abdominal ostium of the tube by adhesions while the uterine aperture remains patulous. When the pressure of the fluid contained in the tube reaches a certain height the flow takes place. The characteristic symptom is intermittent pain relieved by the discharge. Physical signs may be absent or a mass may be felt, according to the condition of the tube at the time of examination. In reviewing the literature of the condition in 1906 an American writer, Findley, could collect only 59 cases, including one which he reported, and some of these are doubtful, as no operation was performed. He refers to the statistics of Martin, who could find only 8 examples among 1700 cases of salpingitis.

THE VIEWS ON PROSTITUTION OF THE SWEDISH MEDICAL SOCIETY.

As we have shown from time to time in these columns, the authorities in Sweden are contemplating radical changes in regard to prostitution and venereal disease. One of the most interesting discussions on these subjects was organised by the Swedish Medical Society, which devoted a series of meetings in 1911 and 1912 to these topics. In the *Svenska Läkaresällskapets Handlingar* (vol. xli., Nr. 3, 1915) a summary of this discussion is given by the Swedish "Medicinalstyrelse" (Board of Health). This discussion, in which leading members of the profession took part, not only revealed the great complexity of the problems concerned, but also showed how divergent were the views held as to the best methods of regulating prostitution and limiting venereal disease. Between the two extremes represented by the "regulationists" and the "abolitionists" were the lukewarm supporters of regulation, who wanted the control of prostitutes to be exercised with more humanity than has hitherto been the case. Finally, by 52 votes to 50, a motion was passed emphasising the necessity

from a social-hygienic point of view for the regulation of professional prostitution. But, it was added, the present method of regulation should be reformed on the following principles: 1. The sanitary control of prostitutes should be put on a perfectly legal footing, secured by a definite law. 2. The control of prostitutes should be in the hands of the medical authorities. 3. The supervision of prostitutes should, as far as possible, be undertaken by women, including women doctors. 4. The examination bureau should be linked up with the hospital in which prostitutes are treated and should preferably be within the precincts of this hospital. 5. The medical superintendent of this hospital should also always be in charge of the medical department of the examination bureau. 6. The examination bureau should be so organised that prostitutes could receive advice as well as undergo an examination. 7. The premises of the examination bureau should be reserved for prostitutes and should not be used for the examination of women arrested for some reason or other, nor for the accommodation of women detained by the police, even though these women happen to be prostitutes. 8. The registration of prostitutes should never be confided to the police, but should be in the hands of medical men, and it should be the duty of the medical superintendent of the bureau to investigate the prostitute's history and allied problems. 9. Women under 17 and others not fully developed should never be registered. 10. Public homes or refuges should be opened for young and undeveloped girls to save them from prostitution. As the voting in the Swedish Medical Society shows, this retention of regulation in a modified form was disapproved of by nearly half the members present; and the views of the majority have subsequently been severely criticised by Professor Johansson, who pointed out that the "regulationists" had failed to meet the many objections which had been raised against regulation. The majority's proposals for the reform of regulation were, he argued, either already introduced, or they were unessential, or impossible to carry through. In short, the arguments of the "regulationists" were, in his opinion, mainly founded on prejudice, and they adhered to their views by ignoring facts. Be this as it may, it is evident that the medical profession in Sweden, as represented by the Swedish Medical Society, is too radically divided on this subject to give the country a clear lead.

THE EXHIBITION OF THE ROYAL ACADEMY OF ARTS.

THE war has had an effect upon the exhibition of the Royal Academy for 1916, but not the melancholy one that has usually been recorded of artistic or literary enterprises during the past 18 months. This exhibition, indeed, appears to us to be distinctly more interesting than many of its predecessors. The painting is on a higher level, and it has occurred to some artists that the times in which we live are not suitable for facile exploits or noisy innovations. The particular attraction of the exhibition is a series of portraits by several painters with completely different ideals and technique, who have managed to achieve real distinction in their several ways. Among Mr. Orpen's six portraits is one of Dr. Lloyd Roberts, the consulting obstetric physician at the Manchester Royal Infirmary. It is an excellent picture, though it will not be the work of Mr. Orpen's brush to attract the most attention, for it is without the element of caricature which is obvious in two at least of the other canvasses, although it shares with them the distinction of admirable characterisation. Mr. Lavery sends four portraits, of which the best is a beautiful picture of the younger daughter of the Prime Minister. Mr. Gerald Kelly sends three portraits of female subjects, of which "Reyes with Clasped Hands" is particularly finely observed. Mr. Charles Shannon also sends three female portraits, all decorative, of which one, "The Lady with the Amethyst," has been bought by the Chantrey Bequest. Mr. Sant paints himself at the age of 96 with the vigour of two generations younger. Mr. George James Coates sends a good picture of Lieutenant-Colonel Bruce Porter, R.A.M.C. (T.), and Mr. W. W. Ouless paints Major Theodore Dyke Acland, R.A.M.C. (T.), pleasantly. There is an excellent portrait by Sir Luke Fildes of his son as a "Coldstreamer," and several other accomplished representations of young soldiers appear on the walls, notably the portrait by Mr. J. J. Shannon of Lieutenant N. J. Prinsep. The level of portrait painting in this country, it seems to us, has gone up, though it must be remembered that the coiffure and dress of modern women, the clean-shaven habits of modern men, and the rigid lines of uniform compel the artist of to-day to be sure of his modelling and accurate in his technique. The wobbly anatomy and fantastic dermatology which not so long since were frequently displayed in the Academy portraits of academic and civic personages, have been reformed away. Next to the portraits, or for natural reasons in priority to them, the war pieces will attract attention, and of these Mr. Clausen's pathetic fantasy is the most arresting. The numerous quiet English landscapes form a third feature of an agreeable collection.

THE HUMAN OSTRICH.

Dr. C. J. van Houweninge Graftdijk describes[1] an interesting case of pica, or the craving for unnatural articles of diet that is not rare in certain forms of insanity. The patient, a wharf labourer, aged 32, had shown increasing general debility for two months, which was attributed to failure of appetite; he had remained at work until two days before he went into hospital. For a month before his admission he had complained of pain in the left side of the abdomen soon after food, and frequent vomiting without hæmatemesis, though melæna had been observed. On examination he was found to be very thin, slow of speech, and during examination he passed water involuntarily. The abdomen was somewhat distended and rigid, and did not move on respiration; some peristalsis was seen in the left epigastrium, and the whole left side of the abdomen was dull on percussion, while the right side gave the normal resonant note. No signs of free fluid in the peritoneal cavity were made out. The left hypochondrium and flank were tender on palpation, and tenderness and resistance were found per rectum on the left side of the pelvis. On the next day a hard but indefinite mass was palpated in the left flank; examined bimanually this showed ballottement, and emitted audible clashing sounds or coin sounds resembling those elicited by the palpation of an abscess cavity partially filled with gas. The patient appeared to be sinking from inanition; the diagnosis was doubtful, and so an exploratory laparotomy was made below the left costal margin under local anæsthesia the same evening. It was

[1] Nederl. Tijdschrift voor Geneesk., Amsterdam, 1916, vol. i., p. 982.

found that the stomach contained 3 lb. 11 oz. of metallic objects, varying in size from a cold chisel, weighing 11 oz. and 5 inches long, down to a collection of coins, bolts, nuts, rivets, wire nails, tin-tacks, screws, and hooks; there were also half-a-dozen small flints. The man made a good recovery and left the hospital after six weeks. Six months later he returned, with the same complaint of weakness and loss of appetite. Examination with the X rays showed an opaque object in the ascending colon; this was removed by operation, and proved to be a piece of tin-plate 4 inches long, and a piece of slate pencil. The patient was watched while in hospital, but he succeeded in swallowing a piece of soap and 2 oz. camphorated spirit, neither of which did him any harm. He again recovered from operation and was removed from the hospital to an asylum. But there he died a few days later, with fever and signs of inflammation of the mediastinum and right lung. At the post-mortem examination the œsophagus was found to be acutely inflamed from the level of the larynx down to within 4 cm. of the diaphragm, and at the level of the sixth dorsal vertebra it contained three metal screws, and a tinplate box 1½ inches in diameter and ¾ inch high. The œsophagus was adherent to the hilum of the right lung; the upper two lobes of the right lung were soft, light grey-red in colour, and contained numerous cavities exuding pus on pressure. The stomach was not enlarged, thick-walled, or ulcerated. The patient had received asylum treatment for dementia præcox on several occasions before he came under Dr. Graftdijk's observation. The clashing or coin-like sounds elicited on palpation of the patient's abdomen when he first came under observation lend a colourable probability, if such a loan be thought necessary, to the well-known account given by Mr. J. Hopkins of the child that swallowed a necklace of large black wooden beads and was treated in St. Bartholomew's Hospital in 1828. It will be remembered that the father had occasion to give "the child a shake to make him obedient, and such a rattling ensued as nobody ever heard before. 'Why, damme, it's *in* the child!' said the father; 'he's got the croup in the wrong place.' 'No, I haven't, father,' said the child, beginning to cry, 'it's the necklace; I swallowed it, father.'" While the child was in hospital it was necessary, according to Hopkins, to muffle him in a watchman's coat for fear he should wake the other patients. Dr. Graftdijk does not seem to have found any such precaution advisable in the case of his patient, but he gives a remarkable and convincing photograph of the 132 foreign bodies removed from the stomach at the operation.

WE shall publish in a forthcoming number an obituary notice of the late Dr. T. Colcott Fox.

THE next session of the General Council of Medical Education and Registration will commence at 2 P.M. on Tuesday, May 23rd, at the new premises of the Council, 44, Hallam-street, Portland-place, London, W., under the Presidency of Sir Donald MacAlister.

ABERDEEN EYE INSTITUTION.—The annual meeting of this institution was held on April 26th. The number of new cases treated during the year was 2771. Of the patients 33 were treated in the institution with an average stay of 16 days. There is a deficit on the year's working of £215. The expenditure for the year was £561.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Water-carts for the Army.

THE Touring Club Français has decided to use a part of the funds devoted to the soldier at the front in providing potable water for the army of operations. It has now furnished water-carts in which is a filtering apparatus for rendering the water limpid, and also rectangular tanks well calibrated wherein to sterilise the water with the minimum of hypochlorite. These carts have the advantage of providing water when the springs and wells are affected by the rains, and multiply the sources of the water in permitting the utilisation of rivers, brooks, and ponds. Finally they assure a better sterilisation of the water distributed to the troops. The Touring Club has ordered 100 of these carts, the type being the regimental cart of the Engineers. Each carries two pumps and hose, a clarifying filter of sponge, and two sterilising tanks of sheet iron. The first pump draws up the raw water at the source near which the cart stops, and after passing through the filter the water runs into one of the two tanks, where it is sterilised by hypochlorite of soda. The second pump then takes the filtered and sterilised water contained in the tank and impels it into the casks on carts by means of which potable water is provided for the different cantonments. The filtering cart when empty weighs only about 1200 kg., and allows a delivery of 3000 litres an hour of quite clear and sterile water, each giving easily 25,000 to 30,000 litres a day. All of the carts are now delivered.

Ocular Prosthesis.

M. Valois and M. Rouvier think that following on the traumatisms of war the lesions which accompany enucleation of the globe of the eye—palpebral cicatrices, fibrous bands, reduction and irregularities of orbital cavity—necessitate a new technique. The authors apply to ocular prosthesis the principle of entire moulding of the orbital cavity, with its cicatricial bands and traumatic malformations. In this way accurate adaptation is secured. The technique requires first the taking of the impression, followed by a mould of this. Then the actual artificial eye is made and coloured. This procedure allows of the following advantages: very great mobility of the artificial eye, to which are transmitted the least movements of the stump, absence of troublesome conjunctival secretions, satisfactory appearance of eyelids and eyebrow, lightness and ease of making the appliance, and moderate cost.

Obituary.

French science has sustained two sad losses. Professor Gilbert Ballet is dead after six months of severe suffering. He was interne in 1875, physician of the hospitals in 1884, *agrégé* in 1886 with a thesis that attracted much attention on internal language and the different forms of aphasia, chief of service in 1890, titular professor in 1908, and finally member of the Academy of Medicine. He was one of the favourite pupils of Charcot, and devoted himself to mental pathology. His works put him rapidly in the front ranks of French neurology. He published a number of memoirs on exophthalmic goitre, the affections of the nerves, brain, and cerebellar apparatus, studies on the psychoses, general paralysis, and the deliriums of persecution or of melancholia. In collaboration with Professor Proust he published "Hygiène du Neurasthénique," in which is shown all that can be expected from hygiene as a curative and preventive factor. Finally the "Traité de Pathologie Mentale," published under his chief direction, constitutes a veritable monument of actual medical literature. Only a few days later followed the death of Dr. Léon Labbé. Former interne of the Paris hospitals, *agrégé* of the faculty with a thesis on the coxalgias, and surgeon of the hospitals in 1864, he was during a quarter of a century one of the most able and consulted as well as successful operators. He published some much-read works on tumours of the breast and of the abdominal wall, and his "Leçons de Clinique Chirurgicale." He was Senator for the Orne, Commander of the Legion of Honour, and member of the Academy of Medicine and of the Academy of Sciences. His death occurred suddenly at 83, which age he had reached without an infirmity.

NATIONAL HEALTH INSURANCE.

Notification of Measles Order.

AT a recent meeting of the London Panel Committee the adjourned report of the Finance and General Purposes Sub-committee was considered, and a resolution was adopted "that the Panel Committee are of opinion that it is very desirable that the medical care and treatment of cases of measles and whooping-cough should remain in the hands of general practitioners, and should not be transferred to full-time medical officers appointed by the local authorities for such purpose, and still less to nurses, who in effect would be acting as unqualified medical practitioners." It was further recommended that the attention of the General Medical Council, the British Medical Association, and the Medical Defence Union should be called to the matter. The question referred to has arisen out of the Order of the Local Government Board as to the notification and nursing of cases of measles, and out of the scheme prepared in this connexion by the Central Council for District Nursing in London. This scheme proposes that it should be made possible for cases of measles and whooping-cough to be attended by nurses without the direct supervision of a medical practitioner. It is suggested that the nurses should be directed to advise the calling in of medical assistance if serious symptoms should be observed by them. This would leave the nurses to detect dangerous symptoms, and assign to medical men the responsibility of attending serious cases only, while denying to them the experience to be gained by treating measles and whooping-cough in their simpler forms, as well as the emoluments to be earned by so doing. The report of the subcommittee referred to pointed out that no provision is proposed for the payment of the medical men called in to attend the more serious cases except that the local authorities should make arrangements with medical practitioners or should employ an assistant to the medical officer of health.

Panel Practitioners' Accounts for 1914.

The London Panel Committee recently passed a resolution with a view to bringing about, if possible, a final settlement of the accounts of the practitioners upon the London panel for the year 1914. When it is considered that the resolution referred to was carried on March 21st, 1916, its terms do not appear to be unduly forcible. It was agreed "that the Panel Committee do strongly represent to the Commissioners the growing indignation of the practitioners on the panel at the delay which has occurred in effecting the final settlement of the practitioners' accounts for the medical year 1914." And the resolution concluded by stating that the delay in the payment of the moneys so long overdue is "most regrettable, and that the Insurance Commissioners and the Insurance Committee be so informed." The Panel Committee, however, had to occupy itself also with the even more remote prospect of payment for the year 1915, with regard to which it decided to take into consideration the period of time which must elapse before the calculation of the amount of accounts would be possible, and it accordingly passed a resolution "that the practitioners on the panel be invited to communicate to the committee their views as to the desirability of pressing for emergency settlement of their accounts for the medical year 1915."

Morning Consultation Hour for National Health Insurance Doctors in Dundee.

At a meeting of the Dundee Insurance Committee held on April 19th the vexed question of the morning consultation hour was again under discussion. Carrying out the finding which was come to at a meeting of the Dundee National Insurance Committee held on Jan. 19th, where by 13 votes to 10 it was decided that doctors on the panel should be asked to give one hour in the morning for consultation, the doctors were asked at what hour in the morning they were willing to be in attendance for consultation, or what alternate proposal they had to make, so that insured persons might have opportunities for consultation in addition to the evening hours already fixed. The Medical Benefit Committee reported that in view of the nature of the replies, they regretted to say that they had been unable to give effect to the desire of the Insurance Committee. Of the doctors who had replied, one undertook to see patients at his surgery between 9 and 10 A.M.; four (two of whom were in Broughty Ferry and one in Monifieth) stated that they had already day consulting hours; four stated that if they were at home at any hour at which insured persons called they attended to them; and nine declined to give further facilities for consultation. The question was put as to whether it was possible to bring pressure on the doctors to carry out the wish of the Insurance Committee. The chairman replied that they had entered into contracts with the doctors for the current year on the basis formerly arranged, and they had no power to break their contracts. The Committee in arranging new contracts could deal with the matter.

THE THIRD REPORT OF THE YELLOW FEVER COMMISSION.

IN THE LANCET of Jan. 23rd, 1915, p. 196, we commented upon the First and Second Reports of the Yellow Fever Commission, which brought the account of the incidence of the disease in our West African colonies up to the end of May, 1914. Since then cases of yellow fever have been reported in Nigeria as well as on the Gold Coast and in the Northern Territories, making, up to September, 1915, a total of 82 attacks, of which 45 occurred in Europeans (including 4 Syrians) and 37 in natives; 25 of the Europeans died, but only 4 natives. The outbreak of war interfered with the carrying out of the investigations, as a number of the members of the West African Medical Staff who were engaged in this work had to be recalled. Since the publication of the last report Dr. Andrew Balfour, C.M.G., has been appointed by the Secretary of State for the Colonies to be a member of the Commission. Already two supplementary volumes containing reports by the investigators under the Commission, and others, have been issued, and these were noticed in THE LANCET of Feb. 5th. A third volume is in preparation.

The Nature of the Seidelin Bodies and their Relation to Yellow Fever.

In accordance with the intention expressed in their second report, the Commission now proceed to deal with the question of the occurrence and significance of the protozoon-like bodies, discovered in 1909 by Dr. Harald Seidelin, in the blood and tissues of patients suffering from yellow fever, to which he gave the name of *Paraplasma flavigenum*, claiming that this was the specific parasite of yellow fever. The Commission now give a critical review of the evidence for and against Dr. Seidelin's claim. The investigations undertaken by the Commission's experts as well as the researches carried out by other authorities have thrown fresh light upon the question at issue and appear to justify the conclusions now arrived at by the Commissioners and appended to their third report. Great care, it may be added, has been taken to state Dr. Seidelin's case as far as possible in his own words so as to avoid controversy arising later, if points had been imperfectly stated or omitted, upon which he placed special importance.

Among the chief opponents of Dr. Seidelin's claims are mentioned Dr. Schilling-Torgau, of Hamburg, and Dr. Agramonte, of Havana, both of whom maintained that similar bodies had been found in the blood of persons in other conditions than yellow fever. It became clear to the Commission that if it could be definitely shown that similar bodies are of frequent occurrence in the blood or tissues of man and animals apart from any suspicion of yellow fever, obviously the whole contention must fall to the ground, and there could be no necessity for any further discussion as to their specific nature. The work is quoted of Dr. David Thomson, who examined in London the blood of 25 normal guinea-pigs for the presence of Seidelin's bodies, and who found in all of the animals bodies resembling them. In Dr. Thomson's opinion the majority of these bodies were artefacts and could not be considered as protozoal in nature. Lieutenant-Colonel David Harvey, R.A.M.C., at the request of the Commission, undertook the examination of normal and inoculated guinea-pigs, and found in practically every slide one or two bodies which simulated the "paraplasmata." Further, Dr. C M. Wenyon and Dr. G. C. Low, of the London School of Tropical Medicine, published in the *Journal of Tropical Medicine* for December, 1914, a paper, quoted by the Commission, showing the occurrence of Seidelin's bodies in normal guinea-pigs born and bred in England, and these bodies it was almost impossible to separate from pure artefacts.

Conclusions.

The evidence submitted to them has led the Commissioners to the following conclusions:—

1. No proof has been given that the bodies named *Paraplasma flavigenum* are of protozoal origin. 2. Under that name a number of microscopic objects are included. 3. Excluding artefacts, the origin of most of these objects is at present uncertain, and so far none has been proved to possess any definite physiological or pathological significance. 4. There is, so far, no reason to regard any of these objects as the cause of yellow fever. 5. The nature of the virus of yellow fever still remains undetermined.

The report is signed by all the Commissioners—namely, Sir James Kingston Fowler, Professor W. J. Simpson, Sir Ronald Ross, Sir William Leishman, and Dr. Andrew Balfour, in whose unanimous and definite decision the medical profession can place the most implicit confidence. Their final opinion on Dr. Seidelin's claim will nevertheless be a disappointment to those who had hoped that the specific parasite of yellow fever had been discovered, and that the finding of the *Paraplasma flavigenum* in the blood of a patient would settle a disputed diagnosis of yellow fever.

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

H. W. L. Molesworth to be temporary Surgeon.

ARMY MEDICAL SERVICE.

Colonel J. M. Irwin to be temporary Surgeon-General whilst a Director of Medical Services.

ROYAL ARMY MEDICAL CORPS.

Temporary Honorary Lieutenant-Colonel Sir David Hardie, having ceased to be employed with the Australian Voluntary Hospital, relinquishes his commission.

The undermentioned Lieutenant-Colonels to be temporary Colonels whilst Assistant Directors of Medical Services:—J. D. Alexander and A. W. Hooper, C.M.G., D.S.O.

Major P. S. Lelean to be temporary Lieutenant-Colonel whilst Assistant Director of Medical Services.

Captain A. D. Fraser to be temporary Major while commanding a Field Ambulance.

Temporary Captains J. P. Campbell and F. Charlesworth to be temporary Majors.

The undermentioned temporary Lieutenants to be temporary Captains:—A. H. Corley, I. M. Grant, G. B. Nicholson, A. R. Rendle, G. D. Fairley, T. B. Carlyon, W. H. Sheffield, D. Wood, J. Keag, K. H. A. Kellie, W. Gilbertson, E. C. Bourdas, E. P. Satchell, H. W. Barnes, J. H. J. Davys, K. F. Sonntag, H. A. C. Swertz, J. B. Walker, H. J. de Brent, A. D. Howard, P. Kitchin, P. H. Hadfield, J. C. Glen, D. Gillies, A. Emery, J. B. Alexander, C. A. Robinson, J. P. Howe, H. H. Folker, L. H. Walsh, F. Bryan, C. C. de B. Daly, B. H. Leigh, S. C. Dyke, W. N. Parker, T. W. Kelly, W. B. Heywood, R. A. Flynn, W. Beck, E. F. Greene, S. H. Hall, F. G. Bullmore, H. R. Sedgwick, E. Allan, J. D. Gunn, D. C. Graham, R. L. Ritchie, E. M. J. O'Farrell, W. C. W. Glenny, J. A. Gentle, J. C. Rix, W. Hutchison, J. Wylie, B. H. S. Aylward, E. A. Aylward, A. G. H. Smart, R. McC. Paterson, W. Haward, B. S. Browne, C. Butler, R. Denman, J. D. Gimlette, E. R. Stone, W. D. Wilkins, W. Harvey, H. B. Taylor, H. B. Shepherd, J. Craig, P. A. McCarthy, W. A. Slater, H. Grey, B. M. Carruthers, C. H. Armitage, F. J. Fahy, E. W. S. Martin, W. J. F. Symons, R. A. Banbury, T. Johnston, A. G. Southcombe, W. V. Robinson, B. W. Cohen, N. C. Talbot, F. H. Moran, C. F. Strange, E. E. Isaac, C. J. Nicholson, F. T. D. Clindening, N. McI. Falkiner, J. W. Bennett, R. L. Williams, T. D. Jago, C. H. Hopwood, A. J. H. Boyton, C. B. Dobell, H. Crichton, T. Fearnhead, C. L. Chalk, F. L. Underwood, E. M. le P. Power, G. B. Brown, L. Rose, W. Kirk, T. P. Gray, J. R. H. Ross, J. M. Twentyman, M. Hall, A. E. Carsberg, G. H. S. Letchworth, C. E. W. Wilmot, H. A. Upward, E. V. Hunter, J. B. Mason, H. H. K. Sparrow, W. Leggett, J. T. Hurst, B. B. Ferrar, R. Buchanan, W. W. Banham, R. S. Dewar, G. M. Elliott, A. C. Profeit, I. A. Davidson, N. G. W. Davidson, W. Macdonald, A. H. D. Smith, W. E. Cooke, W. H. Hooten, F. S. Campbell, A. A. Rutherford, D. McK. Reid, H. H. Robinson, H. T. Prince, A. W. Tabuteau, C. W. Jenner, J. H. Mason, W. W. Dickson, and A. L. E. F. Coleman.

Temporary Lieutenants Tom Bates and T. H. Lunney relinquish their commissions.

The undermentioned to be temporary Lieutenants: B. R. Roberts, A. B. Tucker, G. C. W. Williams, S. Littlewood, J. G. Ross, F. W. Davidson, C. Stanley-Clarke, W. B. Anderson, A. E. Harrisson, D. Ross, S. Robson, W. M. Thomas, R. T. Taylor, A. E. Pinniger, H. L. Morrow, J. Harvey, W. Ward-Smith, J. R. Hall, J. P. Lowson, P. J. Murray, J. MacF. Donnan, D. J. Drake, P. Milnes, R. A. Leembruggen, J. F. C. O'Meara, C. G. Skinner, A. M. Bayne, W. Anderson, R. Butterworth, A. F. Wright, J. C. Houston, W. F. Dunlop, and C. W. Aikman.

The undermentioned temporary Honorary Lieutenants to be temporary Lieutenants: J. E. C. Maguire, J. G. Ackland, and W. R. White-Cooper.

F. C. Wilkinson to be temporary Honorary Lieutenant while employed at No. 6 British Red Cross Liverpool Merchants' Mobile Hospital.

Canadian Army Medical Corps: Captain F. A. Brockenshire (Canadian Militia) and E. M. Campbell to be temporary Captains.

SPECIAL RESERVE OF OFFICERS.

Captain R. G. J. McEntire resigns his commission on account of ill-health.

TERRITORIAL FORCE.

Army Medical Services.

Lieutenant-Colonel E. V. Gostling, from East Anglian Field Ambulance, to be A.D.M.S., East Anglian Division, with the temporary rank of Colonel.

Lieutenant-Colonel T. F. Dewar, from D.A.D.M.S., to be A.D.M.S., Central Force, with the temporary rank of Colonel.

Royal Army Medical Corps.

North Midland Mounted Brigade Field Ambulance: Captain L. A. Dingley to be temporary Major whilst in command of a Field Ambulance.

South Midland Mounted Brigade Field Ambulance: Lieutenant A. C. O. Brown to be Captain.

West Lancashire Field Ambulance: Lieutenant J. St. G. Wilson to be Captain.

South Midland Casualty Clearing Station: Lieutenant C. W. T. Baldwin to be Captain.

Highland Field Ambulance: R. Grey to be Lieutenant.

North Midland Field Ambulance: Lieutenant J. B. McLean to be Captain.

Welsh Field Ambulance: R. Griffith (late Major, Royal Welsh Fusiliers) to be Major; Captain E. L. Anderson, from Attached to Units other than Medical Units, to be Captain; and K. F. R. Davison to be Lieutenant.

Southern General Hospital: Captain W. J. Foster, from Territorial Force Reserves, to be Captain, and is seconded for duty at Reading War Hospital; and Lieutenant R. Hitchings to be Captain.

East Anglian Field Ambulance: Captain W. J. Dearden relinquishes his commission on account of ill-health.

London Field Ambulance: Lieutenant (temporary Captain) D. J. Scott to be Captain.

London General Hospital: Lieut. L. N. Reece to be Captain.

Attached to Units other than Medical Units.—Captain (temporary Major) M. B. Ray to be Major. Surgeon Captain J. Owen, from Lancs (Fortress) Engineers, to be Captain. Lieutenants S. O. Bingham and G. Johnston to be Captains. Lieutenant A. C. O. Brown, from South Midland Mounted Brigade Field Ambulance, to be Lieutenant.

DEATHS IN THE SERVICES.

Lieutenant-Colonel W. Woodforde-Finden, I.M.S. (retired), on April 27th. He entered the service in 1866 and subsequently did duty with the 94th Foot, the 11th Bengal Cavalry, the 2nd Gurkhas, the 13th Bengal Infantry, and the 7th Bengal Cavalry. He was on Lord Lytton's staff at Simla in 1876 and on Sir Donald Stewart's staff in Afghanistan, 1878 to 1880. He took part in the march with Lord Roberts for the relief of Kandahar (mentioned in despatches, medal with clasp, and the bronze star). He served in Burma, 1887 to 1888, and on the North-West Frontier of India in the second Miranzai Expedition, 1891 (medal with clasps). He retired in 1891.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

In the 96 English and Welsh towns with populations exceeding 50,000 persons at the last Census 7225 births and 5435 deaths were registered during the week ended Saturday, April 22nd. The annual rate of mortality in these towns, which had been 17·7, 17·7, and 17·4 per 1000 in the three preceding weeks, fell in the week under notice to 16·4 per 1000 of their aggregate civil population estimated at 17,312,295 persons in 1915. Among the several towns the death-rate ranged from 5·3 in Oxford, 7·4 in Wimbledon, 8·3 in Stockport, 8·8 in Leyton, and 9·2 in Wallasey, to 23·0 in Bath, 23·8 in West Hartlepool, 24·0 in Swansea, 25·3 in Sunderland, and 26·9 in Tynemouth.

The 5435 deaths from all causes were 331 fewer than the number in the previous week, and included 416 which were referred to the principal epidemic diseases, against 381 and 452 in the two preceding weeks. Of these 416 deaths, 146 resulted from whooping-cough, 121 from measles, 66 from infantile diarrhœal diseases, 57 from diphtheria, 22 from scarlet fever, and 4 from enteric fever, but not one from small-pox. The annual death-rate from these diseases was equal to 1·3, or 0·1 per 1000 below that recorded in the previous week. The deaths attributed to whooping-cough,

which had been 134, 141, and 182 in the three preceding weeks, fell to 146, and included 35 in London, 20 in Birmingham, 14 in Manchester, 12 in West Ham, and 5 in Croydon. The deaths referred to measles, which had been 122, 121, and 120 in the three preceding weeks, numbered 121, and caused the highest annual death-rates of 2·1 in Stoke-on-Trent, 3·1 in Dudley, 3·3 in Swansea, 3·5 in Rochdale, and 3·6 in Stockton-on-Tees. The deaths of infants (under 2 years) from diarrhœa and enteritis, which had been 66, 50, and 57 in the three preceding weeks, rose to 66, of which 12 were registered in London, 6 in Stoke-on-Trent, 5 in Manchester, and 4 each in Birmingham, Liverpool, and Salford. The deaths attributed to diphtheria, which had been 71, 45, and 65 in the three preceding weeks, fell to 57, and included 16 in London, 6 in Birmingham, 5 in Liverpool, and 3 each in West Ham, St. Helens, and Bradford. The deaths referred to scarlet fever, which had been 20, 15, and 16 in the three preceding weeks, rose to 22, of which 8 occurred in London, 3 in Manchester, and 2 in Bolton. The fatal cases of enteric fever, which had been 7, 8, and 12 in the three preceding weeks, declined to 4, which were recorded in Exeter, Salford, Leeds, and West Hartlepool respectively.

The number of scarlet fever patients under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, which had been 1768, 1778, and 1717 at the end of the three preceding weeks, fell to 1679 on April 22nd; 191 new cases were admitted during the week, against 214, 252, and 163 in the three preceding weeks. These hospitals also contained on the aforementioned date 1355 cases of diphtheria, 232 of whooping-cough, 161 of measles, and 39 of enteric fever, but not one of small-pox. The 1323 deaths from all causes in London were 109 fewer than in the previous week, and corresponded to an annual death-rate of 16·0 per 1000. The deaths referred to diseases of the respiratory system, which had declined from 405 to 323 in the five preceding weeks, further fell to 314 in the week under notice.

Of the 5435 deaths from all causes in the 96 towns, 174 resulted from violence, 388 were the subject of coroners' inquests, and 1522 occurred in public institutions. The causes of 47, or 0·9 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest. All the causes of death were duly certified in Sheffield, Leeds, Bristol, Bradford, Nottingham, and in 66 other smaller towns. Of the 47 uncertified causes, 9 were registered in Birmingham, 4 in Gateshead, and 3 each in Southend-on-Sea, Liverpool, Sunderland, and South Shields.

HEALTH OF SCOTCH TOWNS.

In the 16 largest Scotch towns with an aggregate population estimated at 2,372,000 persons at the middle of this year, 1113 births and 791 deaths were registered during the week ended Saturday, April 22nd. The annual rate of mortality in these towns, which had been 19·6, 20·5, and 17·6 per 1000 in the three preceding weeks, fell to 17·4 per 1000 in the week under notice. Among the several towns the death-rate ranged from 11·2 in Kilmarnock, 11·5 in Kirkcaldy, and 12·6 in Clydebank, to 20·1 in Paisley, 26·3 in Coatbridge, and 28·9 in Greenock.

The 791 deaths from all causes were 10 below the number in the previous week, and included 67 which were referred to the principal epidemic diseases, against 77 and 75 in the two preceding weeks. Of these 67 deaths, 31 resulted from measles, 14 from whooping-cough, 9 from infantile diarrhœal diseases, 6 from diphtheria, 5 from scarlet fever, and 2 from enteric fever, but not one from small-pox. The annual death-rate from these diseases was equal to 1·5, against 1·3 per 1000 in the large English towns. The deaths attributed to measles, which had been 52, 36, and 42 in the three preceding weeks, fell to 31, and included 14 in Glasgow, 6 in Greenock, 3 in Paisley, and 2 each in Edinburgh and Aberdeen. The deaths referred to whooping-cough, which had been 8, 10, and 4 in the three preceding weeks, rose to 14, of which 7 occurred in Glasgow and 3 in Coatbridge. The fatal cases of diarrhœa and enteritis (among infants under 2 years), which had been 18, 8, and 13 in the three preceding weeks, fell to 9, and included 3 in Dundee and 2 each in Glasgow and Aberdeen. The 6 deaths attributed to diphtheria were 2 below the average in the three preceding weeks, and included 2 each in Glasgow and Edinburgh. The deaths referred to scarlet fever, which had been 7, 14, and 8 in the three preceding weeks, further declined to 5, and comprised 2 each in Glasgow and Edinburgh and 1 in Paisley. The fatal cases of enteric fever were recorded in Glasgow and Hamilton.

The deaths referred to diseases of the respiratory system, which had been 189, 193, and 167 in the three preceding weeks, numbered 168 in the week under notice, and exceeded by 23 the number registered in the corresponding week of last year. The deaths from violence numbered 24, against 39 and 23 in the two preceding weeks.

Correspondence.

"Audi alteram partem."

THE STUDY OF APPLIED PSYCHOLOGY.

To the Editor of THE LANCET.

SIR,—I have been particularly interested in Mr. J. H. Parsons's letter in your issue of April 22nd, not only because I and several others associated with me hold precisely similar views, but also because we have already formed a society on the lines which Mr. Parsons specifies.

The Society for the Study of Orthopsychics, of which I happen unworthily to be the first President, was inaugurated on July 15th, 1915, despite the opinion of many that "the present time is little suited for embarking on a project of this nature," its avowed objects being (1) the study of human character, social and individual, and of the conditions of its proper development and control; (2) the training of students in applied psychology; (3) the promotion of general interest in this study by lectures, discussions and other means.

At a quarterly meeting of this society at the University of London Club on April 12th there was a symposium on its prospective work by Mr. Cyril Burt, Mr. Cecil Chapman, J.P., Professor Hobhouse, Professor Carveth Read and myself, and if we had had the pleasure of Mr. Parsons's presence at the meeting he would have agreed that the speakers accurately voiced his views. Moreover, the oligarchical constitution of our society is just that which Mr. Parsons has outlined, and for the same reasons. The government is in the hands of the "Members of Council" who are a limited number of psychologists and others directly interested in some branch of applied psychology. "Members," in whom some knowledge of psychology is presupposed, are elected by the council. There are also Associates "interested in the aims of the society" and students. This society, which originated in the psychological laboratory of the Medico-Psychological Clinic at 30, Brunswick-square, where it has its offices, is in touch with certain committees of war research, some of its students are already prepared to undertake research in applied psychology, and the financial position is sound.

The present members of council are Dr. F. Aveling, Mr. C. Burt, Mr. Cecil Chapman, Mr. J. C. Flugel, Mr. J. St. G. Heath, Professor J. T. Hobhouse, Miss M. R. N. Holmer, Sir Lawrence Jones, Dr. Ll. Wynn Jones, Mr. Homer Lane, Mr. George Montagu, Miss J. M. Murray, Professor T. Percy Nunn, Professor Carveth Read, Miss J. Turner, and myself. Further particulars can be obtained from the secretary, Dr. Wynn Jones, at 30, Brunswick-square, W.C.

Mr. Parsons's letter has induced me to notify our existence in order, if possible, to avoid the multiplication of societies having the same objects.

I am, Sir, yours faithfully,

Cavendish-square, W., May 1st, 1916. W. H. B. STODDART.

THE TREATMENT OF COLITIS AND PROCTITIS AND OF ULCERATION OF THE RECTUM AND COLON.

To the Editor of THE LANCET.

SIR,—There has been a good deal written during the past year in various medical journals on the above subjects but I have not seen any mention of a valuable method of treatment in these conditions—viz., ionisation with zinc sulphate 1 or 2 per cent. solutions. The method is simple and painless and easy to apply if a few simple instructions are followed.

The bowel should be as free as possible from gas, fæcal material, blood, and mucus, and, if necessary, should be washed out with warm water previously. A large pad, about 10 by 8 inches, of about 12 thicknesses of lint, damped with warm saline solution and attached to the negative pole of a battery, is bandaged on the upper part of the abdomen, or the lower part if the rectum only is to be treated. A rectal electrode is lubricated and then inserted into the bowel to just beyond the sphincters. A good pattern is made by Messrs. Down Bros.; it consists of a rubber tube 15 inches long and half an inch in diameter. One end is closed and it has a lateral opening near that end. The other

end is closed by a vulcanite tap. Attached to the tap is a binding screw which is connected with a zinc spiral inside the tube and which extends nearly to the hole in the other end. A rubber tube attached to an ordinary irrigator is slipped on to the free end of the tap. The irrigator is charged with warm zinc sulphate solution. Enough solution is allowed to slowly run into the bowel, till it is estimated that the whole of the diseased part is full of the solution. The positive wire from the battery is fixed to the binding screw previously. The current is now turned slowly on to about 20 or 40 milliampères, according to the patient's sensations, and allowed to act for about 5, 10, or 15 minutes, according to the patient's tolerance. If the bowel is irritable it is advisable to insert a suppository containing 2 grains of phosphate of codeia, or something of that kind, an hour before the operation. A bed-pan should also be placed under the patient in case there is an urgent call to empty the bowel. At the end of the time the current must be turned off again very slowly. At the next application the negative pad should be placed on the back, then on one side, and then on the other, so that the bowel is effectively treated all round. If not too high up the sigmoidoscope will show on which side ulceration, if present, is most marked; the negative pole should then be applied mostly to that side. In addition to curing ulceration and inflammation, Dr. C. Russ has shown that the positive pole attracts bacteria to itself and kills them.[1] It would be very interesting to investigate if this is the case with the many strange organisms found in the bowels of our soldiers returning from the East. If the rectum only is affected it is best to treat the patient in the sitting position, as then less solution is required in the bowel, the solution remaining in the rectum by gravity and not running up into the colon, and so has a better chance of being retained the requisite time. If the solution is only retained a few minutes at first this should not cause discouragement, as it will soon be retained longer. At first with an irritable bowel the weaker solution should be used; the strength can be increased as the bowel becomes more tolerant. As recovery takes place the suppository may not be necessary.

The above treatment can be carried out daily, its duration and the strength of current being estimated by the patients' comfort and ability to retain the solution. After the treatment is finished and the rectal electrode has been removed the zinc solution is evacuated by the patient in the ordinary way.

I am, Sir, yours faithfully,

ASLETT BALDWIN, F.R.C.S. Eng.,
Senior Surgeon, West London Hospital; Surgeon to St. Mark's Hospital for Diseases of the Rectum, &c.
Manchester-square, W., May 1st, 1916.

THE TRANSLATION OF JUNG'S ANALYTICAL PSYCHOLOGY.

To the Editor of THE LANCET.

SIR,—I am obliged to Dr. M. D. Eder for pointing out the error in a publisher's list, which I have since ascertained to be that of Messrs. H. K. Lewis and Co. My share in the book is merely that of editor, only one paper, and that from the French, being translated by me. Five different persons have contributed translations from the German, but, as your correspondent says, he and his wife have done the lion's share.

I am, Sir, yours faithfully,

Harley-place, W., May 2nd, 1916. CONSTANCE E. LONG.

MEDICAL MEDALS.

To the Editor of THE LANCET.

SIR,—The Army Medical Museum at Washington, D.C., possesses a valuable collection of medals relating to medicine, which was started and fostered by the late Dr. John S. Billings, and it is highly desirable that this collection should be added to and completed as far as possible. To this end the assistance and advice of physicians who are collectors of medical medals is respectfully solicited. The museum appropriations will avail to purchase individual medals which are not in our collections, the purchase of private collections, or of individual items in them, will be carefully considered, private donations of separate medals or groups of medals will be most welcome and will be duly credited to the donors, and the transmission of catalogues of medals for sale is requested. If physician-collectors will bring this notice to the attention of antiquarian establishments having medals for sale, the favour will be most highly appreciated.

I am, Sir, yours faithfully,

C. C. MCCULLOCH,
Lieutenant-Colonel, Medical Corps, U.S. Army; Librarian, Surgeon-General's Office.
War Department, Office of the Surgeon-General, Army Medical Museum and Library, Washington, D.C., April 14th, 1916.

[1] THE LANCET, Feb. 14th, 1914, p. 447.

FUNCTIONAL NERVOUS DISEASE.

To the Editor of THE LANCET.

SIR,—I have re-read Dr. C. A. Mercier's letter in reference to which I accused him of attacking "the whole theory of the rational treatment of incipient mental disturbance" and am bound to admit that there is no justification for so sweeping a statement. But I did not claim any novelty for the idea that it is desirable to diagnose the cause of a disease or to obtain the confidence of the patient. "Obtaining the confidence of the patient" may be achieved in many ways, of which the tracing of the causes of the mental trouble and enabling the sufferer to appreciate their nature is unfortunately not a common one. "Every physician worth his salt may have been practising it since the time of Æsculapius," but obtaining the confidence of the patient is one thing and understanding the etiology of his trouble is another. If the physician's chief aim is to do the former without the latter, it cannot too emphatically be insisted that his achievement does not rank much higher than that of every practitioner of the confidence trick worth his salt. Moreover, is it not true of those suffering from many forms of incipient mental disease that confidence in their physician is not at all one of their obvious attributes?

The greater part of Dr. Mercier's letter in THE LANCET of April 29th deals with the psycho-analysts and does not concern me.

I am, Sir, yours faithfully,

G. ELLIOT SMITH.
The University of Manchester, May 1st, 1916.

THE ANNUAL GENERAL MEETING OF THE BRITISH DENTAL ASSOCIATION.

To the Editor of THE LANCET.

SIR,—The papers and discussions at the annual general meeting of the British Dental Association, to be held at the house of the Royal Society of Medicine on June 15th, 16th, and 17th, will be entirely devoted to the important subject of war injuries and gunshot fractures of the jaws and the best methods of treatment. There will also be an exhibition of appliances and splints as improved and adapted for the most efficient use under the new war conditions. May I, by your courtesy, appeal to those of your readers who have been treating cases of jaw injuries to contribute models, appliances, splints, skiagrams, &c., to the exhibition? It is particularly requested that in sending exhibits the following points should be observed: 1. The case containing the exhibit should include a note of the exhibitor's name and address and a list of all the exhibits contained in the case. 2. That each part of the exhibit should have the exhibitor's initials attached to it by means of a small piece of gummed paper. 3. That all exhibits should reach the house of the Royal Society of Medicine, 1, Wimpole-street, W., not later than Friday, June 9th.

I am, Sir, yours faithfully,

F. N. DOUBLEDAY,
Honorary Secretary, Museum Committee.
19, Hanover-square, W., May 2nd, 1916.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.—A reception by the President and Council will be held at the West London Hospital on May 10th, at 8.30 P.M. Mr. James Cantlie will give an address on the work of the British Red Cross Society. There will be exhibits of Red Cross methods and appliances, and skiagrams and scientific instruments. Members are asked to bring guests, and ladies are particularly invited. Tickets, 5s. each person, and the whole of the proceeds, after paying expenses, will be given to the Officers' Families Fund, to be especially devoted to the families of officers of the Royal Army Medical Corps. Application for tickets, accompanied by a remittance, should be addressed to the Senior Secretary, Dr. Reginald Morton, 66, Harley-street, London, W.

The War.

THE CASUALTY LIST.

THE following names of medical officers appear among the casualties announced since our last issue :—

Accidentally Killed.

Captain R. K. MacGregor, R.A.M.C., received his medical education at St. Bartholomew's Hospital, qualifying in 1911, and was in practice in Clerkenwell, London, before joining the R.A.M.C. in August, 1915.

Died.

Captain R. R. J. Holmes, R.A.M.C.
Captain E. W. Dean, Australian A.M.C.
Lieutenant G. V. Fletcher, R.A.M.C., qualified in 1899, and was in practice at Birkenhead before joining the R.A.M.C. in May, 1915.
Captain E. B. Hartnell, R.A.M.C., was a student at Guy's Hospital, London, qualifying in 1892, and was in practice at Bridgwater, Somerset, previous to joining the R.A.M.C. in April, 1915.

Died of Wounds.

Fleet-Surgeon W. R. Center, R.N., was educated at Edinburgh, University College, London, and Berlin, and qualified with honours at Edinburgh in 1893, joining the Royal Navy in 1896.
Surgeon P. D. Pickles, R.N.V.R., was educated at Leeds Grammar School and Leeds University, qualifying in 1908, and joined the Royal Naval Volunteer Reserve in 1914 just before the outbreak of war, prior to which he was in practice at Earby, Colne.

Wounded.

Lieutenant T. D. Miller, R.A.M.C.
Lieutenant A. Massey, R.A.M.C., attached to the Royal Irish Rifles.
Captain J. C. Sale, R.A.M.C., attached to the Essex Regiment.
Captain N. C. Kapur, I.M.S.

Missing.

Captain J. H. Beilby, R.A.M.C., attached to a yeomanry regiment.

THE DUBLIN REVOLT.

The following casualties amongst medical officers are reported :—

Wounded.

Major C. A. J. A. Balck, R.A.M.C.
Captain W. McK. H. McCullagh, R.A.M.C.

DEATHS AMONG THE SONS OF MEDICAL MEN.

The following sons of medical men must be added to our lists of those who have fallen during the war :—

Lieutenant A. L. Johnston, Shropshire Light Infantry, son of Dr. G. F. Johnston, of Seymour-street, London, W.
Second Lieutenant G. T. Webb, Royal Fusiliers, youngest son of the late Dr. W. H. Webb, of Kingsbridge, Devon.
Acting Lieutenant T. E. L. Marsh, Royal Marines, second son of Fleet-Surgeon Marsh, of Liss, Hants.
Surgeon P. D. Pickles, R.N.V.R., eldest son of Mr. J. J. Pickles, M.R.C.S., L.R.C.P., of Camp-road, Leeds.
Fleet-Surgeon W. R. Center, R.N., son of the late Surgeon-Colonel W. Center, I.M.S.

THE HONOURS LIST.

The following promotions and appointments of medical officers for distinguished service in the field, all dated Jan. 1st, are announced :—

To be C.B.—Temp. Col. W. Hunter, A.M.S.; Temp. Col. C. A. Ballance, M.V.O., A.M.S.; Temp. Col. A. W. M. Robson, C.V.O., A.M.S.; Temp. Col. V. W. Low, A.M.S.; Temp. Col. J. P. Stewart, A.M.S.; Temp. Col. C. J. Symonds, A.M.S.; Temp. Col. W. Thorburn, A.M.S.; Temp. Col. C. S. Ryan, A.M.S.; Temp. Col. F. D. Bird, A.M.S.; Temp. Col. Sir V. A. H. Horsley, F.R.S., A.M.S.

To be K.C.M.G.—Surg.-Gen. W. Babtie, V.C., C.B., C.M.G.

To be C.M.G.—Temp. Col. A. H. Tubby, A.M.S.; Temp. Col. A. E. Garrod, F.R.S., A.M.S.; Temp. Col. F. M. Sandwith, A.M.S.; Temp. Col. W. H. Willcox, A.M.S.; Maj. (temp. Lt.-Col.) C. H. Lindsay, R.A.M.C.(T.F.); Lt.-Col. F. Etherington, Canadian A.M.C.; Lt.-Col. S. H. McKee, Canadian A.M.C.; Maj. E. G. Davis, Canadian A.M.C.

Distinguished Service Order.—Lt.-Col. E. V. Gostling, R.A.M.C.(T.F.); Maj. J. G. Bell, R.A.M.C.

Military Cross.—Temp. Capt. W. N. Rishworth, R.A.M.C.

THE SUPPLY OF MEDICAL OFFICERS FOR THE NAVY AND ARMY.

The Central Medical War Committee has the authority of the Director-Geueral, Army Medical Service, for stating that a considerable number of medical men is required at once for service in the Royal Army Medical Corps. The development of military operations has caused a large proportion of the medical officers who have hitherto been serving in this country to be detailed for service abroad, and it is essential that there should be others ready to meet future demands. This request for officers has come before the enrolment scheme of the Central Medical War Committee has been completed. The Committee is therefore compelled to ask for volunteers from among both the enrolled and the unenrolled. Those willing to join within a month should send their names at once to the Central Medical War Committee, 429, Strand, W.C., or make direct application to the War Office.

The following letter, addressed to THE LANCET by Sir Clifford Allbutt and Sir William Osler, describes the existing situation in clear terms :—

During the next few weeks the course of events seems certain to lead to renewed fighting, to very many casualties, and to a call for more and more doctors to tend the sick and wounded. The supply could be met—as, if other methods fail, doubtless it would be met—by conscripting medical men, but some time ago the War Office recognised that a certain scheme of voluntary enrolment could be made to give them what they wanted and in a better way. The working of the scheme, as is now well known, was entrusted in England and Wales to the Central Medical War Committee, a committee representing the profession at large and the several medical corporations and schools, and in close touch with the Insurance Commission and the great Government departments which employ medical men.

This scheme of voluntary enrolment, as contrasted with conscription, appears to present certain very great advantages, in which both the community at large and the individual practitioner will have their share. In any circumstances some doctors must go, and some be kept at home, but whereas with conscription the task of selection might fall into the hands of local lay tribunals, the voluntary scheme provides that in each district it falls to a local committee of medical men, whose professional knowledge and knowledge of local conditions enables them to form a better judgment both of the needs of the civil community and the difficulties of the individual practitioner; while in any case from their decision an appeal lies to the Central Committee.

This scheme of voluntary enrolment has been framed to secure also a due rotation of work and sacrifice, so that when the volunteer has completed the year of service for which he signs on he is free to return home, his place with the army being taken by another, an arrangement fairer to himself and better for his civil patients than indiscriminate compulsion.

Now the success of the scheme obviously depends on the number of enrolments. If the response is meagre the Army Medical Department will be starved or rather conscription must come. Moreover, the correlative provision for the civil population and the fair distribution of sacrifice will be imperilled. It is true that the response so far has been fair, but with the spring campaign upon us the need for more men, and yet more, is so pressing that there is considerable anxiety even in respect of the immediate future. The scheme can only work well if all, or practically all, our brethren of suitable age enrol themselves. However, we find that, not unnaturally, some are hesitating to enrol lest a lack of enrolments should expose them unfairly to be summoned. This cannot, in any case, happen, since the Committee has decided that no calls shall be made until 75 per cent. are enrolled. We are all proud of the record of our profession in the past, and of its splendid service in this war; we shall be still more proud if it rises to meet the crisis and will deal with it by voluntary effort. If by age and office we are sheltered from the claims of service, we know none the less clearly how hard is the call upon many of our younger brethren, with many of whom we have been in correspondence. Domestic duties or pecuniary claims may seem imperative; surely, however, when in the day of victory the old relations are restored, the public will know how to reward those of us who, setting all else aside, obeyed the call of King and Country.

Let us conclude, as we began, by saying that the need is now so urgent that the time for consideration cannot be prolonged. By the enrolment of all who are of military age the burden of each will be lightened.

The Central Medical War Committee, while continuing its work with unabated vigour, is considering the position in which its activities are placed by the new Bill for general compulsion under which medical men below the age of 41 become liable for military service. The Bill introduces a factor which may complicate voluntary enrolment and prejudice the position of the civil population in respect of medical service.

EXCHANGE OF PRISONERS IN KUT.—It is officially announced that a letter has been received from the Turkish Commander-in-Chief in which he agrees to exchange General Townshend's sick and wounded for an equivalent number of Mahommedan Turkish prisoners. Hospital and other ships have been sent up to begin the evacuation.

THE WOUNDED ALLIES' RELIEF COMMITTEE.—This committee is sending out almost at once further medical aid to the sick and wounded Serbian soldiers in Corfu. The first unit despatched, consisting of a medical man and three nurses, under an administrator, arrived in Corfu some weeks ago, and this unit is now, owing to the urgent need of the Serbians, about to be strengthened by the addition of one more doctor and seven more nurses, who will take with them large consignments of hospital stores, clothes, and food.

Original bath caravans for Belgium.—The Wounded Allies Relief Committee is shortly sending to Belgium, for the benefit of soldiers at the front, two novel bath caravans that have been specially arranged to provide the greatest number of baths possible in the shortest time. The designer of the caravans is Mr. J. R. Anderson, A.M.I.C.E., M.I.M.E., who has done the work voluntarily. Since the caravans will be drawn by horses from place to place where water can be obtained from rivers or streams, dimensions of breadth and length have been the controlling factors in the case, and as the weight of the caravans must be within the power of two horses to draw, careful consideration has been necessary to details of construction in order to reduce weight to a minimum. Before arriving at a definite conclusion upon the question of fuel for heating water, consideration had to be given to the possible sources of supply in that part of Belgium where the troops are. At first it was thought that wood fuel would be best, but this idea was finally abandoned for petroleum, for reasons of easier transport and greater heating power. After considering the merits of petroleum fuel boilers in general, the boiler most suitable for the type of hot-water apparatus designed for the caravans was considered to be the one manufactured by Messrs. Clarkson, of Chelmsford, which is used for motive power on the National Company's steam buses and carts. For the purpose of these cars, &c., steam is generated by the boiler, but for the "bath caravans" the heat evolved by the boiler will pass through an ingenious arrangement of tubes within a storage tank, to be quickly absorbed by the water contained in it for almost immediate use. Above the storage tank is placed a secondary tank into which water will be pumped by manual labour through a pump attached to the caravan for feeding the storage tank under pressure, in order to keep up a continuous supply for filling baths by means of lengths of flexible hose. Before entering the supply tank the water will be screened and strained. While allowing some 10 to 12 gallons of water per bath at about 120° F. and to be cooled down as necessary by the addition of cold water, and allowing 10 minutes per bath, it is estimated that 60 or more baths an hour will be possible. It is assumed that baths will be given continuously for perhaps 14 hours without cessation, in which case some 800 men should be dealt with in this time. For the moment, it is intended to construct two such caravans, which should afford accommodation for some 1600 men in 14 hours. Twelve enamelled light steel baths of commodious size, some 5 feet 3 inches long by about 2 feet 2 inches inside, will be carried on a caravan in specially arranged lockers with hinged flap doors opening outwards and downwards, and the baths will be "nested" one inside the other for easy transport. Along the roof of the caravan on either side will be fixed roller-controlled waterproof sheeting, to be pulled outwards for securing it to light standard poles to form a weather-proof awning, while at the ends and sides easily attached sheetings will be provided to form a complete enclosure as found necessary. Within the enclosures thus formed the baths will be placed in rows, and grips will be cut in the ground, or loose wooden troughs laid down, for carrying off waste water to a suitable outlet. The hot-water apparatus with its tanks is placed in the rear of the caravan, and is conveniently arranged for outside management and control. It is also housed in a steel-plate compartment insulated from the caravan proper by a double-plate bulkhead partition filled in with non-conducting material for protection against fire. On either side of the boiler is a hot or drying closet, complete with rods and hanging hooks and slatted shelves for clothes and towels, and on either side of the caravan also is provided a Thresh's emergency type of disinfector, enclosed within a steel-plate compartment, opening outwards, for dealing with clothes and garments requiring treatment, but as space is limited these disinfectors can only be on the small scale. None the less, they are sufficient in action and should be found very useful. Good sleeping accommodation for two men is provided above the bath lockers, and in the centre of the caravan, approached from a door behind the driver's seat, is a ventilated and lighted passage-way with a store cupboard of good size at the end, with a useful arrangement of deep shelves over it of the full width of the caravan. In addition, brackets and hooks and other fixings for carrying pump-gear, hoses for baths, &c., are provided, and perhaps a portable cooking-stove will be carried. Under the driver's seat is fitted and enclosed a sealed tank for the supply of liquid fuel sufficient for one day's use, which will be recharged from barrels or kegs brought up from the supply base.

War Fair at the Caledonian Market.—A War Fair is to be held under the auspices of the committee at the Caledonian Market, Caledonian-road, London, N., on June 6th and 7th. All large goods intended for the sale should be addressed to Mr. J. R. Hayhurst, the superintendent of the Caledonian Market, who has arranged for warehouse accommodation. Parcels can be sent to Messrs. Selfridge and Co., Limited, marked "Caledonian, W. A. R. C.," carriage paid. Donors of bulky and valuable goods who cannot undertake transport are requested to communicate with the "Caledonian" Secretary of the Wounded Allies Relief Committee, at Sardinia House, Kingsway, W.C.

OBITUARY OF THE WAR.

MALCOLM EDWARD BALL, M.B., B.S. LOND., M.R.C.S., L.R.C.P.,

LIEUTENANT, ROYAL ARMY MEDICAL CORPS.

Lieutenant M. E. Ball, who was in his thirty-first year, died from wounds received in the attack on the Turkish positions at Sanna-i-Yat on April 9th. He was the son of Mr. Alderman E. Ball, J.P., of Lewisham-hill, and was educated at the Roan School, Greenwich, and at New College, Margate. He subsequently became a student at Guy's Hospital, London, and qualified M.R.C.S., L.R.C.P. in 1908, proceeding to M.B., B.S. Lond. in 1909. He held house appointments at Guy's, and for a time was editor of the hospital *Gazette*. Later on he settled in practice at Emsworth, Hants. Last year he offered his services to the Royal Army Medical Corps and was given a commission in September. He was ordered to Suvla Bay, where he contracted dysentery, and was invalided to Malta. On recovery he went to the Persian Gulf. Lieutenant Ball leaves a widow and two children. A medical contemporary at Guy's Hospital, himself in the Royal Army Medical Corps, writes: "By the death of



Malcolm Ball I and many others have lost a very dear friend. Vigorous in mind and body, he has always represented to me a charming combination of all the best qualities of a sportsman and gentleman. To say that he will be deeply missed is but a poor way of expressing the blank sense of loss which his death has caused to those who knew and loved him."

ROBERTSON STEWART SMYTH, M.D., B.CH., B.A.O. DUB.,

MAJOR, ROYAL ARMY MEDICAL CORPS.

Major Robertson Stewart Smyth died in London on April 5th. Born at Banbridge, Co. Down, on August 18th, 1879, the fourth son of the late Mr. William Smyth, of Brookfield, Banbridge, he was educated at Dungannon Royal School. He proceeded later to Dublin University, and in 1904 took his medical degrees, and passed the examination for the Royal Army Medical Corps. He was appointed house surgeon to Sir Patrick Dun's Hospital for 1905, and was seconded to enable him to take up this appointment. In 1906 he joined the Royal Army Medical Corps, and the next year went to serve in India. In September, 1914, he went to France and served continuously until last December, when he was invalided home. Shortly before this he had been gazetted major, and in January was mentioned in dispatches by Sir John French for distinguished conduct. Soon afterwards he retired from the army owing to ill-health, and three months later he died at the early age of 36. A friend writes: "His lovable disposition and engaging personality gained him many friends, and at Dublin University he soon took a leading part in undergraduate life. Keen on all forms of sport, he especially excelled at football, and gained his place in the University "fifteen" in his second year. In 1902–3 he was captain of the "fifteen," and in the latter year and in 1904 was chosen to represent Ireland as a forward in international matches. When he joined the medical school he became a member of the class at Sir Patrick Dun's Hospital, where he entered into everything both in medical work and in games with all the energy displayed at the University. He was captain of the team which won the hospital football cup in 1902. His death will be deeply regretted by all who knew him, and he will always be held in affectionate remembrance by the friends he made in his all too short life."



JOHN WILFRED STOKES, L.R.C.P. LOND., M.R.C.S.,

LIEUTENANT-COLONEL, ROYAL ARMY MEDICAL CORPS (T.F.).

The death of Lieut.-Colonel John Wilfred Stokes, at the age of 43, which took place as the result of shell shock in France, is a real loss to Sheffield. While engaged in the arduous duties of a general practitioner in a highly populous district he also acted as demonstrator of anatomy for many years in the University of Sheffield. His services in this direction were entirely voluntary, and were much appreciated owing to the regularity, punctuality, and zeal with which he discharged his duties in the anatomical department. In addition to being a stimulating teacher, he helped materially to equip the department with mounted specimens which were specially acceptable at a time when funds for departmental grants were very small. In his busy life he managed to find time to publish papers on anatomical subjects in addition to dealing with medicine and surgery. His geniality and quiet humour, coupled with a frank, straightforward disposition, won for him great popularity with his colleagues and students alike, and his death is universally regretted.

THE TRAGEDY OF THE WITTENBERG CAMP.

Lady Parker of Waddington writes from Aldworth, Haslemere, Surrey, in the following moving terms concerning the doctors who perished at Wittenberg when trying to save from typhus fever the prisoners of war who had been deserted by the German doctors: "Many of us feel deeply that some memorial should be put up to the memory of the three brave doctors who died at Wittenberg Camp of typhus while doing their utmost to alleviate the terrible sufferings and misery of the prisoners. The King has met all our wishes by the honours he has graciously bestowed on the gallant doctors who mercifully survived—Major H. E. Priestley, Captain A. C. Vidal, and Captain J. La F. Lauder; and we now feel that the names of those who died should be remembered in the years to come. All will agree that if possible the memorial should take the form of helping to alleviate suffering and do some permanent good, but that must necessarily depend on the amount received. I will gladly receive and acknowledge the smallest sums. I do not ask for large contributions, which are wanted for countless other things, but I feel all women will wish to join in honouring the memory of such men."

Medical News.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—At the First Professional Examination for the Licence in Dental Surgery held on April 27th and 28th, the following candidates were approved in the subjects indicated:—

Mechanical Dentistry and Dental Metallurgy.—Malcolm Beverley Burton, Guy's Hospital; Gilbert Leedham Clements, Birmingham University; Wallace Duncan Hatton, and Amin Maher, Guy's Hospital; Harold George Skitt, Manchester University; and Stanley Carlyle Turner, Guy's Hospital.

Dental Metallurgy.—Alexander Benjamin Aldred, Guy's Hospital; Clifford Baker, Birmingham University; Arthur Frederick Bartle, Myer Ginsberg, and Alwyn Norman Goudge, Guy's Hospital; Frank Dawson Gratrix, Manchester University; Herbert William Hill, Royal Dental Hospital; John James, Guy's Hospital; Frank Lockwood, Liverpool University; Herbert Myers Marshall, Guy's Hospital; Reginald William May, Royal Dental Hospital; Alan Lethaby Morgan, Bristol University; Ernest Albert Nunn, and Cornelis Hermanus Olivier, Royal Dental Hospital; Hubert John Sanders, Bristol University; Stanley Ethelbert Tweney, Guy's Hospital; Joseph Frederick Weakley, National Dental Hospital; and Stanley Vernon White, Guy's Hospital.

Mechanical Dentistry.—Theodore Bogues Barton, Guy's Hospital; Hubert Brookman, Royal Dental Hospital; Pieter Jacob Stephanus de Wet, Guy's Hospital; Alan Evelyn, Bristol University; Myer Garfinkel, National Dental Hospital; Charles Luke Highton, Liverpool University; Francis Joslin Jauch, Royal Dental Hospital; Dorothy Mary Smith, National Dental Hospital; Sidney Stamp, Royal Dental Hospital; and Ina Valentine Vincent, National Dental Hospital.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH, ROYAL COLLEGE OF SURGEONS OF EDINBURGH, AND ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.—The examinations of the above Board were concluded at Glasgow on April 21st, with the following results:—

FIRST EXAMINATION.

Joseph Campbell, James Innes Coventry, Agnes Macilwraith Hill, Evan Robert Lloyd, James Charles Meek, William Muirhead Reid, Frederick James Stevenson, and Marguerite Martha Isobel Swanson.

SECOND EXAMINATION.

Richard Gordon Bell, Sidney Hill Waddy, and Maurice Julius Woodberg.

THIRD EXAMINATION.

Robert Austin, Alexander Balfour Black, Donald M'Kenzie Black, James Calder, Jean M'Murray Crawford, Robert Phillips Crawford, John Thomas Dier, George Alexander Grandsoult, Reginald Douglas Howat, Lloyd William Hughes (with distinction), Edward Glyn Jones, and Joseph Michaelson.

FINAL EXAMINATION.

The following candidates, having passed the Final Examination, were admitted L.R.C.P.E., L.R.C.S.E., L.R.F.P. and S.G.:—

William Paterson Hay Lightbody, Glasgow; John Park Mathie, Bilston, Staffs.; John Robert Beith Robb, Glasgow; Alexander Morrison, Glasgow; Thomas Jackson, Wishaw; Andrew Smith, jun., Wickham, co. Durham; John M'Cartney, Girvan; Ronald Harley Rattray, Melbourne; and Thomas Marshall Metcalfe, Glasgow.

THE MENTAL AFTER-CARE ASSOCIATION.—The annual report of the council for the year 1915 shows that, in spite of the war, the work has progressed; but continued support is earnestly requested, and it is suggested that each subscriber might endeavour to secure one new subscriber of, at least, 5*s*. per annum. Mr. Thornhill Roxby has resigned,

on account of ill-health, the secretaryship, which he has held for 28 years. The council expressed their appreciation of his services, and hoped that he might yet continue to take part in a work to the success of which he has largely contributed. The council appointed to the secretaryship Miss E. D. Vickers, who has a long familiarity with the work. During 1915 subscriptions and donations together with dividends on £6200 investments and donations from special funds, amounted to £1349. During the year applications on behalf of 379 persons were received (270 women and 109 men). In addition a large number of old patients wrote to or called at the office. The expenses on behalf of or in relation to the cases were £979. The general expenses were £172. The excess of income over expenditure was thus £198, which has been added to the capital funds. An increased scope of work may result from a proposed scheme of coöperation with the trustees of the Queen Adelaide Fund in respect of cases discharged from the London County Council asylums. The offices are at Church House, Dean's-yard, Westminster, S.W. The Earl of Meath, K.P., is the President, Dr. Henry Rayner the chairman, and Sir George Savage the honorary treasurer.

THE COMMITTEE ON NEGLECT OF SCIENCE.—A meeting was held at the invitation of this committee, of which Sir Ray Lankester, K.C.B., F.R.S. is chairman, on May 3rd, in the rooms of the Linnean Society, Burlington House, Piccadilly. Lord Rayleigh, O.M., Past President of the Royal Society and Chancellor of the University of Cambridge, took the chair, and among those present were Dr. R. W. Macan, Master of University College, Oxford, Sir Edward Schäfer, Lord Montagu of Beaulieu, Mr. H. G. Wells, Dr. Robert Bridges, the Poet Laureate, Professor Poulton, Professor Shipley, Mr. Huth Jackson, and Sir Ray Lankester. Sir Ray Lankester having briefly explained that the meeting was called to express the sense of many people that mistakes which had occurred in administrative departments during the conduct of the war had their origin in ignorance of science, the following resolutions were submitted:—

1. That in the opinion of this meeting it is a matter of urgency, in order to promote national efficiency in the near future, that the natural sciences should be made an integral part of the educational course in all the great schools of this country, and should form part of the entrance examination of the Universities of Oxford and Cambridge, as well as of the newer universities.
2. That it is in the highest degree desirable that the Government should exercise the large power which it possesses of encouraging the study of the natural sciences and thereby increasing the efficiency of our public servants (1) by assigning capital importance to the natural sciences in the competitive examinations for the Home and Indian Civil Service; (2) by requiring some knowledge of the natural sciences from all candidates for admission to Sandhurst.
3. That this meeting is of the opinion that the method indicated in Resolution 2 is the only one by which it is practicable to bring about the desired change in the attitude of the schools and colleges throughout the country towards the natural sciences and to make some knowledge and understanding of those sciences general. As the results of such changes will only develop in the course of years, it is urgent that the matter should be at once taken in hand by His Majesty's Government.

The resolutions having been adopted, the committee can proceed to take such steps as they may consider appropriate in order to bring the views expressed in them to the notice of the Government.

MEDICO-PSYCHOLOGICAL ASSOCIATION OF GREAT BRITAIN AND IRELAND.—The next quarterly or general meeting of this association will take place on Tuesday, May 16th, at 11, Chandos-street, Cavendish-square, London, W., under the Presidency of Lieutenant-Colonel David G. Thomson, at 2.45 P.M. A paper will be read by Dr. D. Orr and Major R. G. Rows, R.A.M.C., on Experimental Toxic Lesions in the Rabbit's Brain: and their Bearing on the Genesis of Acquired Idiocy and Imbecility in Man.

NEW MEDICAL AND SWIMMING BATHS AT TORQUAY.—The new medical and swimming baths at Beacon Hill, Torquay, provided at a cost of £15,000, were opened by the mayor (Councillor C. T. Towell, J.P.) on May 1st. The outbreak of war greatly increased the difficulty of carrying out the construction of the baths and delayed the opening. The medical baths are arranged in suites for men and women. The suite for women contains seven treatment rooms with 15 dressing-rooms attached, together with the necessary heated cupboards, attendance-rooms, and offices. The men's suite consists of six treatment rooms with 13 dressing-rooms and heated cupboards, lavatories, and attendance-rooms. The treatment given includes Aix douche (single or double) and Scotch douche, these three treatments being arranged in one room of very ample proportions. Another room is allotted to seaweed baths. Other rooms provide for shallow and deep baths, a reclining and local vapour bath on a new and improved system, Dowsing electric bath, and reclining bath for natural sea-water or for medicated water baths, such as Nauheim, pine, and sulphur. The electric and vapour baths are so planned in relation to adjoining rooms that either immersion or double treatment can follow. The whole of the bath-rooms are lighted by external windows and have additional ventilation provided by inlet tubes and exhaust ventilators. All the dressing-rooms are top lighted and ventilated, and the visitor to the baths will be at once struck by the bright and cheerful appearance of the whole of the apartments. The walls and floors of all treatment rooms are covered with mosaic tiling. The dressing-rooms have wooden floors and the walls have dados of tiling, whilst the floors of corridors and offices are laid with terrazzo. By means of the apparatus any treatment can be given with any water or any admixture of waters at whatever temperature medical men may prescribe, and at a considerable range of pressures. There is an excellent outdoor promenade which can be reached from the cooling-room and will no doubt prove an attractive feature in summer time. The swimming-bath is constructed at the east end of the large assembly hall, and has been built with its roof on a level with the way to the medical baths. The swimming-pond is 100 ft. long × 30 ft. wide, and the walls are lined with glazed bricks, whilst the floor is graduated from 3 ft. 6 in. in depth to 7 ft. at the diving-stage end. Arranged round the pond are 47 comfortable dressing-boxes, with two cold-water showers and the necessary offices. A gallery is also provided. The architect was Mr. Alfred J. Taylor, M.S.A., of Bath, and the construction of the baths was entrusted to Messrs. E. P. Bovey and Son, of Torquay.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Parliament and Compulsory Military Service.

THE attention of Parliament is exclusively given at the present time to the question of compulsory military service. The Government proposals, which were brought forward after two secret sessions, include provisions for extending the service of time-expired men, the incorporation in the army of youths as they attain the age of 18, and the extension of compulsion to married unattested men. The first two proposals were embodied in a Bill which was discussed on April 27th, but it was not actually introduced in consequence of the criticism of the House on the advisability of dealing with the recruiting problem in a piecemeal fashion. On Tuesday the Prime Minister announced that the Government had decided to introduce on the following day a Bill covering the whole of their proposals and embodying "immediate and general compulsion." By this means it was desired to secure 200,000 unattested married men. The provision of these men in the latter part of the year was, he said, of vital importance for the maintenance in due strength of the army in the field in view of the contingencies of the summer and autumn campaigns.

The Bill containing the proposals of the Government on compulsory military service was introduced on Wednesday, May 3rd.

Transfer of Invalid Prisoners of War.

A series of questions bearing on the transfer of wounded and invalid prisoners of war from Britain and Germany to Switzerland has been asked in Parliament during the past week. No definite answer could be given as to the possible scope of such an arrangement in the absence of intimation of Germany's assent to the scheme. On Wednesday, however, it was officially announced that the German Government had accepted the proposal of the British Government for the transfer to Switzerland of British and German wounded and invalid prisoners of war. The precedent formed by the arrangement between France and Germany will be followed as closely as possible. Swiss medical men are to be associated with the selection for the transfer of prisoners of war.

HOUSE OF LORDS.

WEDNESDAY, APRIL 26TH.

Repatriation of Invalid Prisoners.

Lord BERESFORD asked the Government for information regarding the steps which were being taken for the reciprocal repatriation of invalid prisoners of war.

Lord NEWTON (representing the Foreign Office) said that on March 25th the British Government had made a proposal to the German Government through the United States Embassy to the effect that a reciprocal arrangement should be entered into for the reciprocal repatriation of invalid prisoners. No reply had yet been received from the German Government, although several reminders had been sent. There was every reason to believe that the answer from Germany when it arrived would be favourable, and on the assumption that it would be favourable certain preparations were being made. The French Government

had signified its consent to allowing the German prisoners to pass through France, and the British Government had requested the Swiss Government to make arrangements for the reception of British prisoners when they arrived. He deplored the delay in bringing the negotiations to a conclusion.

HOUSE OF COMMONS.

WEDNESDAY, APRIL 26TH.

Travelling Medical Boards.

Mr. PROTHERO asked the Under Secretary for War whether a medical travelling board, consisting of one surgeon-general, three majors, and one lieutenant, attended at centres in the Eastern Command to examine soldiers and place them in certain medical categories for service and discharge; whether one of the majors was specially selected for his experience of conditions at the front; whether their recommendations had been cancelled by a standing medical board consisting of a retired lieutenant-colonel and one subaltern summoned by the A.D.M.S. of the district, and whether it was in the interests of the service that recommendations made by the travelling medical board should be thus nullified by the action of officers junior to themselves.—Mr. TENNANT wrote in reply: The functions of a travelling medical board are different from those of a standing medical board. The travelling medical board places the men in the prescribed categories, and the standing board determines questions of invaliding. I am informed that no travelling medical board constituted as described has sat anywhere in the Eastern Command, and that no case has been brought to notice in which the recommendations of a travelling medical board had been cancelled by a standing medical board.

Steel Helmets for the Troops.

Sir H. DALZIEL asked the Under Secretary for War whether he still adhered to his statement that every man in the trenches now had a steel helmet.—Mr. TENNANT replied: When I spoke recently on this subject I had intended to say every man at the front, and I think that I said that. If I did not say so I intended to say so, and I apologise for not doing so. I need not assure honourable Members that when I made that statement I believed it to be true. In this belief I had the number of helmets in mind that I knew to have been sent across. As to their distribution, I am communicating with the general officer commanding in chief, and I shall let my right honourable friend know on the subject.

Colonel ARCHER-SHEE: Is the right honourable gentleman aware that certain battalions at the front, one of which is mine, holding a front line of trench, have only half the number of the men equipped with helmets—that is to say, 500 out of the battalion?—Mr. TENNANT: I could not be expected to know that individual case. My information was that there was a sufficient number of helmets abroad for every soldier to be provided.

Colonel MCCALMONT: When the right honourable gentleman speaks of troops in the front trenches does he include artillery? Is he aware that in some batteries one helmet has to be handed round from officer to officer as they go out and in.

Sir H. DALZIEL: And this after two years.

Mr. TENNANT: I am asking about the distribution and therefore I am not able to answer that question now.

THURSDAY, APRIL 27TH.

Repatriation of Invalid Prisoners.

Mr. MALCOLM asked the Under Secretary for Foreign Affairs whether he was aware that, since the beginning of this year, a number of British prisoners of war had been informed by German authorities that they would shortly be released and sent to Switzerland; and whether a similar selection was being made from among German prisoners interned in England in anticipation of the visits of Swiss doctors.—Lord ROBERT CECIL answered: I have heard that statements to the effect mentioned have been made to British prisoners, whether in good faith or not, is not known. The military authorities will, I hope, take all proper steps in the direction indicated in the second part of the question.

Sir J. D. REES: Is it contemplated that Swiss medical men should chose the prisoners, and, if so, what supervision will there be?—Lord ROBERT CECIL: I do not know whether it is contemplated that Swiss medical men should be the medical men in question. Speaking from my recollection of these matters, I understood that the prisoners would be selected by neutral medical men on both sides. That is the system, I believe, which prevails in Germany.

Mr. JOHN REDMOND: Has the selection of these prisoners actually been commenced?—Lord ROBERT CECIL: No; I am very sorry to say that it has not, because of the difficulty we have experienced in getting any reply from the German Government. We hope that the reply is going to be favourable, but in spite of repeated applications we have not been able to secure any reply up to the present.

Colonel BURN: Will the noble lord use every endeavour to expedite matters, because I hear on very reliable authority that there are many officers who are suffering really seriously and may go off their heads if something is not done soon?—Lord ROBERT CECIL: Every effort I can make will be made to expedite the matter. I have already done all I can to expedite this matter for many months past.

Medical Examination of Recruits.

Mr. LONG (President of the Local Government Board), in the course of his speech on the motion for the introduction of a new Military Service Bill, said that one of the clauses dealt with the very vexed and difficult question of the medical examination of recruits. He proceeded: The House will remember that when we were discussing the Military Service Bill in Committee a proposal was made in regard to those men who had been medically rejected under the Derby scheme. I myself felt some difficulty as to the course which we ought to take. It was certainly desirable that where medical examinations had not been satisfactory there should be an opportunity for reconsideration. There was some evidence that there had been hasty examinations and, indeed, some fraudulent proceedings. On the other hand, bearing in mind as we had to do, that that Bill was really for a fixed and military purpose, it did not seem fair, as the case then stood, to bring in at once all the men who had offered themselves and been rejected on medical grounds. We therefore exempted those who had been medically rejected. This has produced a state of hopeless confusion. There is no other word for it. The War Office has found that it is really practically impossible to get on with the system in its present form. There is no doubt that at the beginning of the Derby Scheme there was a great rush. In some cases hundreds of men were passed through what is called a medical examination in less time than it would be possible to examine at the outside one-tenth of the number. In some cases certificates were never signed, and they bore on them no indication of the person to whom they referred. The War Office finds that there is only one course that can be adopted if we are to get the men who are fit to serve, but whose rejection was the result of hasty examination. ..... Therefore what the Army Council now takes power to do is not to re-examine every person who has been medically rejected, but to take power to have a re-examination in cases if it is thought necessary. The clause applies only to men who offered themselves for enlistment. Therefore the objection which was raised in the course of our earlier debates, that any re-opening of the question of the medically rejected people would mean that all the unfortunate persons who are paralysed or bed-ridden or in any other way totally unable to serve would be subjected again to examination into their cases does not at all arise. This only applies to people who offered themselves for enlistment and had been rejected on medical grounds since August 14th, 1915. Each of those cases can now, if necessary, be reconsidered, but of course I need hardly say that the last thing the Army Council is likely to do is to deal with this pell-mell. All that the Army Council want to do is, where there is good evidence that there are cases of men—in some cases there are large numbers of them—who are fit for service, and who passed the medical examination, not to allow them to be exempt from service because they claim to have a certificate, which I am told in a great many instances cannot be shown to be a certificate properly granted to them after proper medical examination. In some cases they cannot even show that the certificate was granted to them at all. It was granted to someone else and passed on to them. The right honourable gentleman proceeded to deal with other topics.

After considerable criticisms of the proposals put forward by Mr. Long, the motion was withdrawn and the Bill was not introduced.

TUESDAY, MAY 2ND.

Typhus in German Prisoner Camps.

Mr. MALCOLM asked the Secretary for Foreign Affairs whether he was aware that several prisoner camps in Germany, other than Wittenberg, had been ravaged by typhus epidemics and were abandoned by German doctors and orderlies; and whether reports to that effect had reached His Majesty's Government.—Sir E. GREY answered: It appears from notes received from the United States Ambassador in Berlin in April and May, 1915, that typhus was present at Zossen, Altdamm, Schneidemuhl, Gardelegen, Wittenberg, Zerbst, Sagan, Cassel, Erfurt, Langensalza, Ohrdruf, Chemnitz, Altengrahow, and Salzwedel. Unofficial reports have reached His Majesty's Government that in addition to Wittenberg, Altengrahow and Schneidemuhl were abandoned by the Germans. As regards Gardelegen, it appears that except for one German doctor who died at his post, and another who acted in a most praiseworthy manner, the camp was deserted by the Germans. The fact that typhus was present at a camp prevented officials of the United States Embassy at Berlin from furnishing official reports based on personal inspection.

Internment of Invalid Prisoners in Switzerland.

Mr. MALCOLM asked the Under Secretary for War whether he could now cause a selection to be made from among German prisoners in Great Britain who, in the event of an agreement being reached with Germany, would be qualified to be interned in sanatoria in Switzerland, seeing similar selections were said to be in progress in Germany.—Mr. TENNANT replied: The proposals put forward to Germany, which are based on the arrangements in force between that country and France, contemplate that any combatant prisoner of war may present himself for examination by a committee of three medical men, of whom two shall be Swiss and the third of the nationality which holds the prisoner. Those cases selected as suitable by this committee will be subjected to a final examination by a Commission, of which two-thirds will be Swiss. The essence of the whole scheme is that neutral judgment should have the decision, and any preliminary action with the object of forcing the pace taken by us would be liable to misconstruction and might be not unreasonably resented. So far as is known, no steps have been taken by the German authorities to make a selection among British prisoners of war.[1]

Mr. MALCOLM asked whether the categories of diseases for which internment in Switzerland was permissible as between German and English prisoners of war were identical with those agreed upon between France and Germany.—Mr. TENNANT said in reply: The category of diseases which has been proposed to the German Government as rendering an invalid suitable for internment in Switzerland is identical with that which is now in force between France and Germany.

Certifying Surgeons.

Mr. NEWDEGATE asked the Home Secretary whether it was the intention of the Government to act on paragraph 27 of the Report of the Committee of Retrenchment recommending the doing away with the reports of certifying doctors as regards accidents in factories and by this means saving £12,500 per annum; whether he was aware that opinions were strongly held in many quarters that it would be against the interests of the community to discontinue such reports; and whether this economy, if pursued, would have the effect of altering the policy of the Factory Acts which have been in force since 1844.—Mr. HERBERT SAMUEL answered: I propose shortly to introduce a Bill dealing with certain of the recommendations of the Retrenchment Committee that relate to the Home Office. I do not wish to anticipate the statement which I will then make on this subject.

WEDNESDAY, MAY 3RD.

Diagnosis and Treatment of Venereal Diseases.

Replying to Mr. KING, Mr. ASQUITH (the Prime Minister) said: The Government have decided to adopt the recommendations of the Royal Commission as to the diagnosis and treatment of venereal diseases, and arrangements are being made accordingly. It has been decided that 75 per cent. of the cost of these arrangements, which it is hoped may be undertaken with the coöperation of the local authorities, shall be defrayed by means of a grant from the Exchequer. I cannot at the moment promise legislation on the other recommendations of the Commissioners, some of which raise very controversial questions, but the whole matter is receiving the earnest attention of the President of the Local Government Board.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).
When the application of a Belgian medical man would be considered the advertisers are requested to communicate with the Editor.

BOLTON INFIRMARY AND DISPENSARY.—Female Second House Surgeon. Salary £200 per annum, with apartments, board, and attendance.

BOOTLE BOROUGH HOSPITAL.—Junior House Surgeon. Salary £170 per annum, with board, lodging, and laundry.

BRISTOL ROYAL INFIRMARY.—House Physicians and House Surgeons. Salary at rate of £120 per annum, with board, apartments, and laundry.

BURNLEY, VICTORIA HOSPITAL.—Female House Surgeon. Salary £160 per annum, with residence, board, and washing.

BURY INFIRMARY.—Female Senior House Surgeon and Female Junior House Surgeon. Salary £250 and £150 per annum respectively, with board, residence, and washing.

BUXTON, DERBYSHIRE, DEVONSHIRE HOSPITAL.—Assistant House Physician. Apartments, board, laundry, and salary as arranged.

CAMBERWELL INFIRMARY AND CHILDREN'S HOMES.—Assistant Medical Officer. Salary £220 per annum, with apartments, board, and washing.

[1] The Foreign Office has since announced that the German Government has accepted the proposal of the British Government for the transfer to Switzerland of British and German wounded and invalid prisoners of war. The Swiss Government has been asked to send doctors to examine the German prisoners here, and Swiss doctors who are now in Germany to examine French prisoners will be asked also to examine the British prisoners.

DERBY, DERBYSHIRE ROYAL INFIRMARY.—House Physician and Casualty Officer. Salary £200 per annum, with board, residence, &c.

DEWSBURY COUNTY BOROUGH.—Female Medical Practitioner. Salary £300 per annum, and out-of-pocket expenses.

FEDERATED MALAY STATES GOVERNMENT, CENTRAL LUNATIC ASYLUM.—Assistant Superintendent. Salary £400 per annum, with free quarters.

FOLKESTONE, ROYAL VICTORIA HOSPITAL.—Resident Medical Officer. Salary £200 per annum, with board and laundry.

GRAVESEND HOSPITAL.—Female House Surgeon. Salary at rate of £200 per annum, with board and residence.

HASTINGS, EAST SUSSEX HOSPITAL.—House Surgeon. Salary £100 per annum, with residence, board, and washing.

KENT EDUCATION COMMITTEE.—School Medical Inspector and Medical Officer of School Clinic. Salary at rate of £350 per annum, with travelling and sustenance allowances.

LEEDS PUBLIC DISPENSARY.—Two Resident Medical Officers. Salary £200 per annum, with board, residence, and laundry.

LEWISHAM, BOROUGH OF.—Tuberculosis Dispensary Medical Officer. Salary at rate of £250 per annum.

LIVERPOOL HOSPITAL FOR CANCER AND SKIN DISEASES, Myrtle-street.—Honorary Assistant Surgeon.

LONDON TEMPERANCE HOSPITAL, Hampstead-road, N.W.—Assistant House Surgeon for six months. Salary at rate of 120 guineas per annum.

MANCHESTER CHILDREN'S HOSPITAL, Pendlebury.—Two Female Resident Medical Officers, unmarried, for six months. Salary at rate of £100 per annum.

MANCHESTER NORTHERN HOSPITAL FOR WOMEN AND CHILDREN, Parkplace, Cheetham Hill-road.—Female House Surgeon. Salary £120 per annum, with apartments and board.

NEW HOSPITAL FOR WOMEN, Euston-road, N.W.—Female Senior Clinical Assistant to Out-patients. Also Two House Surgeons, House Physician, and Obstetric Assistant (all females), for six months, with board, residence, and laundry.

SALISBURY GENERAL INFIRMARY.—House Surgeon and Assistant House Surgeon, unmarried. Salary £150 and £100 per annum respectively, with apartments, board, lodging, and washing.

SHEFFIELD, JESSOP HOSPITAL FOR WOMEN.—Female Junior House Surgeon, unmarried. Salary £80 per annum, with board, residence, and laundry.

SHEFFIELD ROYAL INFIRMARY.—House Physician. Salary £120 per annum, with board and residence.

VENTNOR, ISLE OF WIGHT, ROYAL NATIONAL HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST.—Assistant Resident Medical Officer.

VICTORIA HOSPITAL FOR CHILDREN, Tite-street, Chelsea, S.W.—House Physician. Salary £200 per annum, with board, lodging, and washing.

WEST END HOSPITAL FOR DISEASES OF THE NERVOUS SYSTEM, 73, Welbeck-street, W.—Clinical Assistants to Out-patients.

WOLVERHAMPTON AND STAFFORDSHIRE GENERAL HOSPITAL.—Senior Student as Assistant to House Surgeons. Board, rooms, and laundry, and salary.

THE Chief Inspector of Factories, Home Office, London, S.W., gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at Honiton, in the county of Devon; and at Turton, in the county of Lancaster.

Births, Marriages, and Deaths.

BIRTHS.

HANDLEY-READ.—On April 21st, at Brunswick-place, Hove, to Quartermaster-Sergeant Instructor (M.G.C.) E. H. Handley-Read, B.B.A., and Eva M. Handley-Read, L.D.S., L.R.C.P. & S.Edin., of Harley-place, W., a son.

HEDLEY.—On May 2nd, at Pont-street, the wife of E. W. Hedley, M.D. Camb., Captain, R.A.M.C. (T.), of a daughter.

HEWLETT.—On April 29th, to Professor and Mrs. R. Tanner Hewlett, of 12, Colinette-road, Putney, a son.

MARRIAGES.

BATCHELOR—KEMPTHORNE.—On April 26th, at Wyck Risington, Henry Washington Batchelor, Captain, R.A.M.C., to Kathleen Mary, younger daughter of the Rev. P. H. and Mrs. Kempthorne.

BEATTY—HANDFORD.—On April 27th, at the Parish Church, Hampstead, John Colley Pounden Beatty, Lieutenant, R.A.M.C., to Isabella Emily Claudia, younger daughter of the late Rev. J. W. Handford and of Mrs. Handford, of Ellerdale-road, Hampstead.

BEVEN—BREAKEY.—On April 26th, at St. Giles's, Reading, John Osmonde Beven, M.A., M.R.C.S., &c., to Iris Marie Carew, elder daughter of Major A. J. Breakey, R.G.A., and Mrs. Breakey.

GEMMELL—KELLETT.—On April 26th, at St. Mary's Church, Dalton-in-Furness, Lancashire, Captain Reginald W. Gemmell, R.A.M.C., to Norah Winifred, younger daughter of the late William Kellett, J.P., of Portland Bank, Southport, and Dowdales, Dalton-in-Furness.

GREAVES—TENNANT.—On April 26th, at St. Luke's, Torquay, Edward Harrison Greaves, M.R.C.S., L.R.C.P. Lond., to Emma Hope Tennant, of Green Bank, Rawdon, Yorks.

DEATHS.

CENTER.—On April 28th, at Naval Hospital, Malta, Fleet-Surgeon William Rudolf Center, of H.M.S. *Russell*, aged 45 years.

GRELLET.—On April 26th, at Orford Lodge, Hitchin, Charles John Grellet, M.R.C.S., L.S.A., aged 73 years.

HOOD. On April 27th, after a short illness, Wharton Peter Hood, M.D. St. And. in his 82nd year.

HOWES.—On April 25th, at Lincoln, Frank Charles Plumptre Howes, M.D. Edin., M.R.C.S., rector of Belton, Suffolk.

WOODFORDE-FINDEN.—On April 27th, at a nursing home, after a long illness, Lieutenant-Colonel Woodforde Woodforde-Finden, Brigade-Surgeon, I.M.S., aged 71 years.

N.B.—A fee of 5s. is charged for the Insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

BLANE AND HIS COMPEERS.

To the Editor of THE LANCET.

SIR,—As in the here now current number of THE LANCET (March 11th) you have a note on Sir Gilbert Blane, you will perhaps admit a few remarks on old medical officers from an Edinburgh student. In the eighteenth century the Edinburgh school did great work for the army and navy. First there was the father of military medicine, Sir John Pringle, himself created a baronet in 1766, who was a younger son of Sir John Pringle, second baronet, of Stitchell, in Roxburghshire. Intended to be a merchant, he was studying at Amsterdam when a lecture by Boerhaave changed his career, led him to study medicine, and he graduated at Leyden in 1730. He was licensed to practise in 1734, and in the same year became professor of moral philosophy in Edinburgh, which chair he held till 1745, though for much of that time he was at the wars. In 1735 he was admitted Fellow of the College of Physicians. In 1742 Lord Stair made him his physician and appointed him physician to the British military hospital in Flanders. Two years later he became Physician-General to the Forces and accompanied the Duke of Cumberland to Culloden in 1745 (aged 38). He in this year resigned his professorship. In 1748, returning from the wars, he settled into practice in London, and was in 1772 President of the Royal Society, dying in 1782 without issue. He was the first to prevent dysentery and hospital fever, and is always recognised as the founder of modern military medicine. Few physicians, said Dr. J. F. Payne in the Dictionary of National Biography, have rendered more definite and brilliant service to science and humanity. His book on "Diseases of the Army," 1752, was reprinted again and again for 60 years. He has a paper in the Philosophical Transactions of 1750 on Septic and Antiseptic Substances.

Nine years after him was born in Scotland, in 1716, James Lind, who graduated in Edinburgh in 1748, but had been at sea in the navy during the preceding nine years. He became a Fellow of the College of Physicians in 1750, and in 1754 published his most important work, a treatise on scurvy, dedicated to Lord Anson, whose loss of 75 per cent. of his crew in the *Centurion* on his voyage round the world had stimulated Lind to detail his experiences of the prevention of scurvy to a society of naval surgeons. Lind showed that scurvy could be prevented by lime juice, and something was done to secure prevention by this means, but it was Blane who, 40 years later, in the year following Lind's death, got the Admiralty order issued making the prevention of scurvy by lime juice an official duty. Lind was treasurer of the College of Physicians in Edinburgh until 1758, when he was appointed physician to the Naval Hospital at Haslar, an appointment he held till his death in 1794. He wrote many books and papers on prevention of disease in the navy and in hot climates, and in 1761 discovered that the steam of sea-water was fresh, and that fresh water could thus be made at sea, as he demonstrated to the Portsmouth Academy in 1761 and to the Royal Society in 1762, an immense benefit to naval hygiene, however slowly adopted.

Francis Home, born in Scotland in 1719, was licensed in 1751, but had been for at least nine years before serving in Flanders as medical officer of Gardner's Regiment of Dragoons. As he did not return with them to Scotland he escaped the disgrace of Prestonpans. In 1750 he graduated M.D. of Edinburgh, and became Fellow of the College of Physicians, of which he was President in 1775. He was professor of materia medica in the University from 1768 to 1798. He wrote on intermittent fever and other diseases of soldiers; his books on bleaching and on principles of agriculture were much read and were translated into both French and German. He is chiefly remembered now as the first physician to give a clinical description of diphtheria in his pamphlet on croup (1765).

Sir Gilbert Blane (1749–1834) studied in Edinburgh, but graduated in Glasgow, 1778. He was a member of the Royal Medical Society and his dissertation was recently reprinted by the society with others by notable men. As you have recently sketched his career one need not detail that here, but one may be permitted a few remarks on the lesson of his life, mentioning first that the present holder of his baronetcy is now serving in the fleet.

One gets little information about the personalities of these old officers, but Lind and Blane are people of great interest to anyone serving in the Naval Medical Department. Lind was obviously a great investigator, who has to his credit (1) distilled water, (2) lime juice proved the cure for scurvy, and (3) "smoak" (which drives away mosquitoes) as a preventive of malaria. There is, on the other hand, no evidence that he got on the soft side of the Admiralty and secured for the sailors the benefits his scientific method had shown to be attainable for them. That credit was left for Blane, who to an equally good education and a turn of mind probably as scientific and an industry as great added the charm which makes people friendly, makes them eager to help you, and to achieve results. It will be noted that Pringle and Blane both entered their services under the ægis of powerful patrons, Pringle with Lord Stair, Blane with Sir George Rodney. Each became by-and-by physician to the reigning monarch. Each got much done. Blane went to the West Indies in 1779; in 1781 returning he recommended issues of wine and fresh fruit to diminish scurvy, and better discipline in sanitary matters, for 1 man in 7 died yearly. Next year he notes that now only 1 man dies in 20, and Rodney allows it was owing to Blane's knowledge and attention that the English fleet was in a condition always to attack and defeat the enemy, and the officers of that fleet recommended him to the Admiralty for a special recompense in 1783 (one wonders how they did that) and he got a special pension. In 1793 he recommended lime juice to Sir Alan Gardner, and in 1795 it was made a service issue. He was now the great authority on hygiene; the army of Egypt was brought home under his regulations to avoid plague; the Home Office consulted him about jail and convict ship fever; the army sent him out to Walcheren in 1810 with others to examine and report and bring the sick and wounded home; it was for this service, well done, that he got his baronetcy. One has always understood that while the officers of the navy owed their uniform to the King's appreciation of the Duchess of Bedford's riding habit, it was Blane's advice that got a uniform established for the men. "It would certainly be for the benefit of the service that an uniform should be established for the common men as well as for the officers. This would oblige them at all times to have in their possession a quantity of decent apparel ..... desertion would also be rendered more difficult." So he says in the book where Lind is described as "the best author in sea diseases" and Captain Cook is noted as having made many improvements in the hygienic management of ships. In 1821 the medical officers of the navy presented to him a piece of plate, and in 1829 he founded the Blane medal given to the medical officer who sends the best journal of his practice. Lind was the patient, rather humble investigator who laid the foundation on which Blane built up a glorious edifice. Blane's lesson to us is that if we can't achieve the results we desire we have to blame ourselves. His charm or tact broke down all the barriers, and the high priest of hygiene was courted. It is for us to see that the reforms we feel necessary are not side tracked.

I am, Sir, yours faithfully,
W. E. HOME,
Victoria, B.C., March 30th, 1916. Fleet Surgeon.

THE CULTURE OF MEDICINAL HERBS.

IN THE LANCET of April 8th attention was drawn to the probable revival in this country of herb-growing as a popular industry, and in this connexion the revised edition of a leaflet on "The Cultivation and Collection of Medicinal Plants in England," just issued by the Board of Agriculture and Fisheries, is worthy of note. In this interesting paper it is pointed out that medicinal herbs have been cultivated in this country for centuries, and in the Middle Ages were grown in kitchen gardens attached to monastic establishments and great country houses. At the present day materia medica (or drug) farms exist at Mitcham, Carshalton, Hitchin, Long Melford, Market Deeping, and Wisbech, but for many years the main source of British drugs has been mid-Europe, particularly Germany and Austria-Hungary. During recent years the acreage devoted to drug cultivation in Britain has been more and more restricted by competition with foreign products, and the result has been a slow but sure ousting of British-grown drugs from the market. The outbreak of the European war, however, has completely changed the situation, and an effort on the part of growers and drug merchants may largely secure for this country in future years the collection and cultivation of medicinal plants which cannot for the present be imported from Central Europe. Supplies of drugs are much in demand, the shortage being serious, and the prices of the most crude drugs that were formerly imported from what is now enemy territory have risen very considerably—in the case of belladonna, for instance, by about 600 per cent.; the prices of other medicinal herbs (colchicum, digitalis, henbane, stramonium, valerian, dill, dandelion, &c.) have risen in proportion to the importance and scarcity of the products. The present time, therefore, in the view of the Board of Agriculture, is particularly favourable for the establishment of a home industry in the cultivation of medicinal plants not only for home use but possibly for export, for it is not anticipated that prices will revert to their old level until long after the war is over. Prices are now sufficiently

good to meet with ease the present high cost of labour, and it is felt that judicious cultivation of drug plants should result in quite adequate profits. In connexion with labour, it is possible that disabled sailors and soldiers could do a great deal of the work required. The leaflet gives useful hints as to methods of cultivation, choice of crops, and the marketing of the same, and suggests that the plants which are likely to be most in demand and to be easily saleable during the coming season are belladonna, henbane, foxglove, thorn-apple, valerian, poppy, aconite, blessed thistle, dandelion, and chamomile.

A REQUEST FOR INFORMATION.

To the Editor of THE LANCET.

SIR,—Could any of your readers possibly give me some information relative to the following?

1. I find under an entry in an old Medical Directory: "Mem. New Syd. Soc." Please tell me for what this is an abbreviation, is such a society still in existence, and whether it is or was a medical society.

2. Can you tell me from any old Medical Directory or Register that you have the Christian name or names and degree or diploma of Dr. Sanders (or Saunders)—I have been given to understand that the former was the correct spelling—who from about 1817–1823 was a medical practitioner in York and Lord Mayor of that city?

3. From similar or other sources can you give me any details regarding one Dr. Pope, who I am told was a favourite Court physician of Princess Amelia, daughter of George III.?

The information that I desire is for literary purposes, and perhaps you may be good enough to suggest to whom I should apply, or any likely books that might contain the details, at either the Advocate's or University Libraries here. I am, Sir, yours faithfully,

Edinburgh, April 27th, 1916. FAMILY HISTORIES.

*** In regard to the first question, our correspondent will find in THE LANCET of July 29th, 1911, p. 302, a review of a book containing a short account of the New Sydenham Society.—ED. L.

MAGIC AND SNAILS.

F. W. writes: A letter has appeared in several newspapers recently containing some interesting details of the life of a British officer at an out-of-the-way and unnamed spot, and introducing the amusing tale of a hospital signboard. The letters of the signboard were constructed of snail shells, believed to be empty, but an hour or two later the English inscription had assumed a Greek or cuneiform character, for the component parts of the letters had migrated as the snails awoke from their torpidity. Not long ago the action of the snails might have been attributed by the mystical-minded to "animal magnetism"; the snails would have been credited with purposeful action. A story which had a great fascination at the time for the students of "animal magnetism" is related in his book on the subject by Dr. William Gregory, F.R.S.E., in the following words:—

"It has lately been stated by M. Allix, on the authority of M. Benoit in Paris, and of another discoverer (also, I believe, a Frenchman, who is now in America), both of whom, during the last ten years, have been employed in working out the discovery, which they had severally and independently made, although they are now associated to work it out, that this magnetic sympathy is remarkably developed in snails; that these animals, after having once been in communication or in contact, continue ever after to sympathise, no matter at what distance they may be. And it has been proposed to found on this fact a mode of communication between the most distant places. Nay, M. Allix describes with care and judgment experiments made in his presence in which, the time having, of course, been fixed beforehand, words spelled in Paris by M. Benoit, and also by M. Allix himself, were instantly read in America, and as instantly replied to by words spelled there, and read in Paris. ..... It would appear that every letter has a snail belonging to it in Paris, while in America each letter has also a snail, sympathetic with that of the same letter in Paris, the two snails of each letter having been at some period, and by some process, brought into full sympathy, and then separated and marked. There is, of course, a stock of spare snails for each letter, in case of accidents, but it is found that these animals will live for a year without food, should that be necessary. When a word is to be spelled in Paris, the snail belonging to the first letter is brought by some galvanic apparatus, not yet fully described, into a state of disturbance, with which his fellow in America sympathises. But this requires to be ascertained; which is done by approaching, in America, to all the snails successively, a testing apparatus, not described, which however includes a snail. On the approach of this, the snail whose fellow in Paris has been acted on, exhibits some symptom, which is not exhibited by any other, and the corresponding letter is noted down. This is done with each letter, and thus the word is finally spelled."

W. E. C. Hanbury.—(1) "A Text-book of Practical Therapeutics." By Hobart Amory Hare, M.D. Henry Kimpton (263, High Holborn). 1914. Pp. 998. Price 21*s*. (Reviewed in THE LANCET, June 19th, 1915.) (2) "Diseases of the Skin." By James H. Sequeira, M.D., F.R.C.P., F.R.C.S. With 48 plates in colour and 238 figures in the text. London: J. and A. Churchill (7, Great Marlborough-street). 1915. Pp. 650. Price 25*s*. net. (Reviewed in THE LANCET, Sept. 18th, 1915.) (3) A "General Catalogue of Medical Books" is published by P. Blakiston's Son and Co., 1012, Walnut-street, Philadelphia. This contains English and American books, and a few translated foreign ones. There is also "The Guide to Current Medical Literature" (described as "An Index Medicus of the World's Literature"), published by the American Medical Association, 535, Dearborn-avenue, Chicago, in January and July, for 50 cents a copy, or 75 cents for the year. Useful catalogues are published by Messrs. Butterworth and Co., 4, Bell-yard, Temple Bar, London, W.C., and by H. K. Lewis, 136, Gower-street, London, W.C. Application might also be made to Messrs. W. B. Saunders Company, 9, Henrietta-street, Strand, London, W.C.

M.R.C.S., L.S.A.—There is, we believe, no apparatus that is generally useful, every case having to be met with a special contrivance. We will obtain further information.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

The following magazines, journals, &c., have been received:—The Shield, Dominion Medical Monthly, Canadian Practitioner, American Journal of Obstetrics, Man, British Journal of Dental Science, American Medicine, Archives of Internal Medicine, Pediatrics, Proceedings of the Royal Society of Medicine, Interstate Medical Journal, American Journal of Rœntgenology, Revue d'Hygiène, Medical Journal of South Africa, New Zealand Medical Journal, India-Rubber Journal.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY, Burlington House, London, W.

THURSDAY.—Papers:—Major P. A. MacMahon: Seventh Memoir on the Partition of Numbers. A Detailed Study of the Enumeration of the Partitions of Multipartite Numbers.—Prof. A. Dendy: On the Occurrence of Gelatinous Spicules and their Mode of Origin in a New Genus of Siliceous Sponges.—Mr. E. S. Goodrich: On the Classification of the Reptilia.—Dr. R. McCarrison: On the Experimental Production of Congenital Goitre (communicated by Sir Victor Horsley). 4 P.M., Election of Fellows.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Wednesday, May 10th.

SURGERY: SUB SECTION OF PROCTOLOGY (Hon. Secretaries—P. Lockhart Mummery, W. Sampson Handley): at 5.30 P.M.
Annual General Meeting.—Election of Officers and Council for Session 1916–1917.

Papers:
Lieutenant Colonel Cuthbert Wallace: Rectal Wounds in the Present War.
Mr. P. Lockhart Mummery: Injuries of the Rectum resulting from the War.

Cases:
Mr. P. Lockhart Mummery: Shell Wound of Rectum.
Mr. Aslett Baldwin (communicated by): Gumma of Rectum mistaken for Malignant Disease.
Lieutenant Colonel Gordon Watson: Three Cases of Injury to the Rectum from Bullet Wounds.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye.
TUESDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Addison: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.
WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations. Dr. Simson: Diseases of Women.
THURSDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye.
FRIDAY.—10 A.M., Dr. Simson: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Addison: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.
SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Eye Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY.—Clinics:—10.30 A.M., Surgical Out-patients (Mr. B. Gillespie). 2.30 P.M., Medical Out-patients (Dr. T. R. Whipham); Gynæcological Out-patients (Dr. Banister). 3 P.M., Medical In-patients (Dr. R. M. Leslie).

TUESDAY.—2.30 P.M., Surgical Operations (Mr. Carson). Clinics:—Medical Out patients (Dr. A. G. Auld); Surgical Out-patients (Mr. Howell Evans); Nose, Throat, and Ear Out-patients (Mr. C. H. Hayton). Radiography (Dr. Metcalfe). 3.30 P.M., Medical In-patients (Dr. A. J. Whiting).

WEDNESDAY.—Clinics:—2.30 P.M., Throat Operations (Mr. C. H. Hayton). Children Out-patients (Dr. T. R. Whipham); Eye Out-patients (Mr. R. P. Brooks); Skin Out-patients (Dr. H. W. Barber). 5.30 P.M., Eye Operations (Mr. R. P. Brooks).

THURSDAY.—2.30 P.M., Gynæcological Operations (Dr. A. B. Giles). Clinics:—Medical Out-patients (Dr. A. J. Whiting); Surgical Out-patients (Mr. Carson); Radiography (Dr. Metcalfe). 3 P.M., Medical In-patients (Dr. R. M. Leslie).

FRIDAY.—2.30 P.M., Surgical Operations (Mr. Howell Evans). Clinics:—Medical Out-patients (Dr. A. G. Auld); Surgical Out-patients (Mr. B. Gillespie); Eye Out-patients (Mr. R. P. Brooks).

THE THROAT HOSPITAL, Golden-square, W.

MONDAY.—5.15 P.M., Special Demonstration of Selected Cases.
THURSDAY.—5.15 P.M., Clinical Lecture.

ROYAL INSTITUTION OF GREAT BRITAIN, Albemarle-street, Piccadilly, W.

MONDAY.—5 P.M., General Meeting.
THURSDAY.—3 P.M., Sir Ray Lankester, K.C.B.: Flint and Flint Implements. (Lecture II.)
SATURDAY.—3 P.M., Prof. W. H. Bragg: X Rays and Crystals—First Results and their Applications. (Lecture II.)

For further particulars of the above Lectures, &c., see Advertisement Pages.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)
THE LANCET Office, May 3rd, 1916.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind	Rainfall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
April 27	30·066	E.	...	106	76	53	55	59	Fine
,, 28	30·110	N.E.	...	107	73	54	55	59	Fine
,, 29	30·114	E.	...	118	72	50	52	58	Fine
,, 30	30·010	N.E.	...	109	71	46	52	55	Fine
May 1	29·890	N.E.	0·32	113	69	47	51	54	Fine
,, 2	29·890	E.	0·30	65	52	48	47	49	Overcast
,, 3	29·740	W.	...	83	59	49	49	50	Cloudy

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Hunterian Lectures

ON

LINKS IN A CHAIN OF RESEARCH ON SYPHILIS.

Delivered before the Royal College of Surgeons of England

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LECTURE I.

Delivered on March 6th, 1916.

MR. PRESIDENT AND GENTLEMEN,—Before dealing with the main theme of these lectures, it would be as well to glance over the advances made in the knowledge of syphilis since the eighteenth century, as by so doing it will be easy to show how we have arrived at our present state of knowledge.

HISTORY (1786–1916).

I propose to take as my first milestone the work done by John Hunter in the latter part of the eighteenth century. It will be remembered that about that time the burning question of the day was whether gonorrhœa and syphilis were forms or stages of one and the same disease, or whether they were two different diseases. To settle the question, Hunter inoculated himself with the discharge from a case of gonorrhœa and developed both gonorrhœa and syphilis, with the result that the unicity of the two diseases appeared to be established. Although many observers were still sceptical and really believed in the duality of the disease, it was not until about half a century later that Ricord finally proved to the world that the dualists were correct. Ricord, a Frenchman, was undoubtedly the first to give us a clear account of the clinical features of syphilis, and most of his work stands as good to-day as when he wrote it.

Our clinical knowledge of syphilis was greatly added to after Ricord's time by another Frenchman, Fournier, and by an Englishman, Jonathan Hutchinson. Both these men held the palm for increasing our knowledge of syphilis until it left us for Germany in the year 1905. From 1905 onwards, up to the present time, we have been served up with so-called epoch-making discoveries. In 1905 Schaudinn and Hoffmann discovered the spirochæta pallida, which is, even up to the present time, generally regarded as the cause of syphilis. In 1907 the Wassermann reaction saw daylight, and in 1909 we had Ehrlich's discovery of salvarsan.

Let us return to the year 1905, and let us see how the discovery of the spirochæta pallida was made. The opinion was held that the probable cause of syphilis was a protozoon; hence it was suggested to Schaudinn, who was one of the leading protozoologists of the day, that he should examine some syphilitic material for protozoa. Schaudinn, as he lived in Bonn, obtained his material from Hoffmann, who had charge of the Venereal Department of the University at that time. I think I am right in saying that the spirochæta pallida was found in the first material examined, and the discovery was confirmed by the subsequent examinations. The world was then told that the cause of syphilis had been discovered. Everyone hastened to repeat the work, and in a very short time the spirochæta pallida had been found in almost every known syphilitic lesion. Although one or two observers tried to ascertain what kind of an organism the spirochæta pallida was, most were perfectly content to regard it as an organism which had no other phase, in spite of the fact that no one had succeeded in actually witnessing division—surely a peculiar occurrence, considering that no more perfect methods of demonstrating an organism existed, and that no organism was more frequently searched for and studied.

I shall leave the spirochæta pallida for a moment, and turn to the Wassermann reaction. Pathologists, in the years just prior to 1907, had been paying considerable attention to the problems of immunity, with the result that various methods had been discovered for the detection of specific bacterial infections. One of the most important of these was Bordet and Gengou's complement-fixation test, by means of which an infection could be diagnosed by finding its antibody in the serum. In order to carry out the complement-fixation test it was necessary to have an extract of the bacteria, the antibody of which was to be sought. As the spirochæta pallida had, up to this time, resisted all attempts to be cultured, Wassermann made an extract of syphilitic fœtal liver, an organ which had been proved to be especially rich in specific spirochætæ, and he used this in place of an extract of the cultured organism.

The modified complement-fixation test was stated to be specific. Like the discovery of the spirochæta pallida, the Wassermann reaction very soon became general, and we all rushed to the conclusion that a positive reaction always meant that a patient had active syphilis, and therefore required treatment, and that a negative reaction often meant that the patient was cured, in spite of two glaring facts: (1) that an extract of non-spirochætal tissue would serve equally well as the antigen; and (2) that the rationale of the reaction was a complete enigma.

Two years later—i.e., in 1909—Ehrlich discovered salvarsan.

Outline of Inception and Results of Research.

As the rationale of chemotherapy is to form the main theme of my lectures, I will not, for the moment, go more closely into Ehrlich's discovery, except to mention one point, upon which hangs what I must deal with first. It was a recognised fact that, 24 hours after the first injection of salvarsan, no spirochætæ pallidæ could be found in the syphilitic lesions, yet it was necessary to repeat the injections of salvarsan several times, and to prescribe mercury afterwards. This paradox led me to doubt whether the statements made about the German discoveries were correct, and, looking at the whole subject, as I did then, with a very open mind, three pertinent questions confronted me, a solution to which I could not find with the knowledge as it then existed. The three questions were the following: 1. If the spirochæta pallida is the cause of syphilis, why do we never see it divide? 2. If all the spirochætæ are killed within 24 hours after the first injection of "606," why is it necessary to continue treatment? 3. If the spirochæta pallida cannot pass through the placenta, how can an apparently healthy woman bear an actively syphilitic child, since it is impossible to imagine that an organism as long as a spirochæta pallida should enter the ovum with a spermatozoon?

It then occurred to me that the spirochæta pallida was not the absolute cause of syphilis, but possibly only a phase in the life-history of a protozoon. Owing to the fact that the spirochæta pallida did not appear to multiply by division or to alter in any way at all, and owing to its close resemblance to male gametes of other protozoa, and even to the spermatozoon itself, it struck me that the organism might perhaps be the adult male, or, at any rate, an end-phase of a complicated protozoal life-history.

In 1911 I began to examine lymphatic glands from the region draining the site of the initial lesion, and I soon found some bodies which I thought might be parasitic in nature, as they had special staining properties, and could not be demonstrated in the control material. As a result of further investigation, with both live and fixed tissue, I was able to work out the life-cycle of what was evidently a coccidial protozoon. As a result of some chemical investigations, I found that the phases of the protozoon consisted of a protein, which had special properties. This, then, gave me a clue which resulted in my being able to explain the rationale or *modus operandi* of the Wassermann reaction. The Wassermann reaction turned out to be a physical reaction dependent upon certain properties which the protein particles of syphilitic sera naturally possessed.

Having found out what these properties were, it became clear how salvarsan worked. Further investigation into this subject soon unravelled the rationale of chemotherapy and opened the way along which future research might be expected to be most productive. One of the first drugs I prepared turned out to be better in many respects than any anti-syphilitic remedy which had previously been discovered, showing that each piece of work dovetailed into the other, the best proof of their correctness. I will attempt to traverse the ground again, and to show how each step follows on the other; therefore I will begin by mentioning a few words about the life-cycle of the organism of syphilis.

THE LIFE-CYCLE OF THE ORGANISM OF SYPHILIS (LEUCOCYTOZOON SYPHILIDIS).

The life-cycle commences with a spore or, as it is generally called, a sporozoite. The sporozoite then becomes intracellular. It chooses a connective-tissue cell or an endothelial cell as its host, and, when inside, it undergoes important changes, which can best be described under two headings.

1. The sporozoite steadily increases in size, and by a process of budding, gives rise to several bodies which later become differentiated into male and female elements (merozoites). When the merozoites are ripe, they escape from the cell, and are then called male and female gametocytes.

2. The sporozoite increases in size, but not to the dimensions met with in the previous case. Having reached a certain size, it divides into two, and again into four. These four masses, by a process of further subdivision, develop into a spore-cyst, and this spore-cyst gives rise to spores. This is doubtless the true asexual stage, and the two stages just described represent the schizogony.

Both the male and female gametocytes are motile, but not flagellated. The male consists of three nuclear bodies, while the female contains a nucleus at her upper end and one or two very actively motile blepharoplasts at her lower end. When the female has reached the size of a red blood corpuscle she loses her blepharoplasts and becomes stationary. Before fertilisation the nucleus of the female gamete moves from the upper pole, takes a central position, and fills up practically the whole cell.

The male gametocyte may develop intracellularly or extracellularly. If the former it enters a large mononuclear leucocyte, wherein the three nuclear bodies increase in size, develop into a coil, and from each nuclear body a number of spirochætæ arise, like the spokes of a wheel from its axle. The spirochætæ break loose, and each can then be recognised as a true spirochæta pallida. In the extracellular development each nuclear body divides and subdivides, so that a rosette-like appearance is formed. Several bodies may break away *en masse*, in the shape of a chain, which ultimately breaks up into distinct coccus-like forms, or discrete coccus-like forms may at first break away. Each coccus-like body contains two rods, which give it the appearance of a diplococcus, and these rods develop into thick and unevenly coiled spirochætæ which eventually become typical spirochætæ pallidæ. The immature spirochæta, which is first formed in this extracellular route, resembles the refringens type; therefore it is very probable that a spirochæta in two stages of its development is indistinguishable from the spirochæta refringens and the spirochæta pallida.

In fertilisation the spirochæta appears to enter the female nucleus, wherein it becomes lost; but in some cases it seems to become connected with the female nucleus by a skein. In both cases the nucleus, which contains both male and female elements, migrates again to the upper pole; such a cell is a zygote. In the nine instances in which I have witnessed fertilisation, only one spirochæta has been observed to enter the female, and it takes about an hour to become entirely lost to view. While entering the whole cell is in active motion, but once the spirochæta has entered the cell comes to a sudden standstill, and appears to become covered with a mantle. A few minutes after impregnation a polar body is expelled with considerable force from the cell, and again another after an interval of a minute or two. During the extrusion of the polar bodies the cell is very actively motile, but it becomes stationary immediately after the second has been ejected. The nucleus of the zygote divides and subdivides into sporoblasts; the sporoblasts may further divide and subdivide *in situ* to form sporozoites; or, a sporoblast may escape and form sporozoites immediately.

From the above description of the life-history of the organism of syphilis I think I am justified in assigning it to the order Sporozoa, and to the sub-class Telosporidia, since the spores are formed at the end of a cycle. The order is doubtless the Coccidiidea, and the species which most befits it is the leucocytozoon; hence a good name for the syphilitic parasite would be *Leucocytozoon syphilidis*. I cannot deal with all the theoretical arguments which have been brought forward against my discovery of the leucocytozoon syphilidis, as it is not in the scope of these lectures, and they have been fully dealt with in my book, "The Biology and Treatment of Venereal Diseases." Suffice it to say here that I have proved these contra-arguments to be false, by a study of the chemistry of the protozoon.

As this chemical study opened new paths of research to me, some of which seemed to lead towards the explanation of the rationale of the Wassermann reaction, I will here indicate what they are. I found that the phases of the leucocytozoon syphilidis consisted mainly of a lipoid-globulin, which proved itself to be more resistant to reagents than the lipoid-globulin of the host's cells—viz., the protoplasm of the plasma cells and of the nucleoli. Further, that its reducing action was also greater, especially in the case of the spirochætal phase, owing to its containing in its molecule a fatty acid not completely saturated. As a result, it was a simple matter to devise several differentiating methods of staining the organism.

STAINING.

I must mention now a few points on the staining properties of the leucocytozoon syphilidis.

The syphilitic organism will stain *in vivo* with borax methylene-blue, some phases with its methylene-violet, and other phases with its methylene-red moiety. Methylene-violet is positively charged, and it is a reduction-sensitive stain, while methylene-red is negatively charged, and it is not reduction-sensitive. Most living cells have a negative charge, for the reaction of the tissues always tends towards the alkaline side of neutrality, for the reason that there are always more hydroxyl (OH') than hydrogen ($H\cdot$) ions. Therefore, most living cells stain better with basic than with acid dyes. The spirochæta pallida, and the female gamete after fertilisation—i.e., the zygote—take the methylene-red stain, while the other phases take the methylene-violet, except the phases between the zygote and the spore, which stain metachromatically—that is, with both methylene-violet and methylene-red. When staining fixed tissue with pyronin and methyl-green, all the phases stain with pyronin and none with methyl-green. At first sight it might be thought that the syphilitic phases had no nuclei, but such is not the case, since the simple manœuvre of using acetic acid before staining enables the nuclei to stain deeply with methyl-green. Methyl-green is a reduction-sensitive stain, indeed, far more so than methylene-violet. Therefore, from what has already been said, it is clear that the phases of the leucocytozoon syphilidis have strong reducing properties which prevent them under ordinary circumstances from staining with methyl-green.

Turning attention to the plasma cells for a moment, *in vivo* they show practically no affinity for methylene-red; when fixed, the protoplasm and the nucleolus stain with pyronin, while the nucleus stains with methyl-green. Under ordinary circumstances pyronin will not stain nuclei, because it is an oxidation-sensitive dye. Therefore, staining is largely influenced by oxidation and reduction. Methyl-green is avid for active oxygen, and therefore will become adsorbed by any protein or lipoid-protein which contains it.

Since nuclei stain so well with methyl-green it is in the nuclei that active oxygen is to be found. Active oxygen converts pyronin into its carbinol or colourless base, hence pyronin cannot stain nuclei.

Reduction is dependent upon active hydrogen, and since active hydrogen converts methyl-green and methylene-violet into their leuco-bases it is at once explained, not only why the syphilitic phases do not stain with methyl-green, but it also shows that the lipoid-globulin of those phases is rich in active hydrogen.

Active hydrogen is electro-positive, and so is pyronin; therefore it is not owing to the presence of active hydrogen that the syphilitic lipoid-globulin is so markedly pyroninophile. The pyroninophile properties are probably due to the free hydroxyl groups in the form of peroxides, which are formed by the reducase system.

The evidence so far obtained is that the syphilitic organism consists of a remarkable lipoid-protein which is rich in active hydrogen, and that it also consists of nucleo-protein, which is rich in active oxygen.

OXIDASE-REDUCASE SYSTEM.

It is now necessary to inquire more fully into this oxidation-reduction process; in other words, we want to know how active oxygen and active hydrogen are formed.

The oxidation process, or better to call it "the oxidase system," has been well worked out by Bach and Chodat, who found that active oxygen was produced by the action of

a ferment, which they called a peroxidase, upon a peroxide. These two authors found, furthermore, that the peroxidase was a metal in the form of an hydroxide. The peroxide is simply another name for hydrogen peroxide. So far as active hydrogen was concerned, all we knew was that an extract of liver, which went by the name of Schardinger's enzyme, would, in the presence of an aldehyde, form active hydrogen; and although Heffter made the suggestion that Schardinger's enzyme was a sulphydryl group, neither he nor anyone else has shown how this sulphydryl group works or what takes the place of the aldehyde in the body. Owing to the invention of the word peroxidase Schardinger's enzyme came to be called perhydridase, and by further analogy this perhydridase is stated to form active hydrogen by its action upon a perhydride.

From my own investigations I am of the opinion that active oxygen is normally formed in the body by the action of ferric hydroxide protein upon five atoms of hydrogen and two peroxide groups, as in this equation:—

$$R.Fe(OH)_8 + 5H + 2H_2O_2 = R.Fe + 6H_2O + O''.$$

The peroxide atoms in the above equation are, in my opinion, formed along with active hydrogen by the action of di-sulphide protein upon two atoms of hydrogen and four hydroxyl groups, as in this equation:

$$R.S.S.R. + 2H + 4OH = R.S + R.SH + 2H_2O_2 + H\cdot$$

The parasitic lipoid-protein, as well as the lipoid-protein particles in the serum of the host, since the host's resisting substance is always as nearly as possible physico-chemically the same as that of the parasite, are now seen to possess a perfect oxidase-reducase system owing to absorbed ferric hydroxide and di-sulphide ions, which on the one hand form active oxygen (O'') and on the other active hydrogen (H·). The great difference between the parasitic lipoid-protein and that of the host consists in the greater reducing action of the former, the significance of which will be seen later.

THE SIGNIFICANCE OF THE HYDROGEN AND HYDROXYL IONS.

The oxidase-reducase system, as has been seen from the equations just given, is dependent upon hydrogen and hydroxyl ions. Therefore it will be necessary now to say a few words upon the two most important catalysts known.

Serum, as is well known, is on the alkaline side of neutrality; hence it will always contain an excess of hydroxyl ions (OH'). Serum is peculiar, in that an equilibrium between the hydrogen and hydroxyl ions is maintained in it, an equilibrium which is usually known as the normal hydrogen-ion concentration. The hydrogen-ion concentration in serum is $0{\cdot}4 \times 10^{-7}$ and the corresponding hydroxyl-ion concentration is $7{\cdot}2 \times 10^{-7}$. Two questions now arise: 1. What is the purpose of this normal hydrogen-ion concentration? 2. How is this normal hydrogen-ion concentration maintained?

One of the most important rôles played by the hydrogen-ion concentration is the influence it exerts upon the solubility of insoluble electrolytes. As is well known, free acids are more insoluble than their alkaline salts and free bases are more insoluble than their chlorhydrates. Take, for instance, the base of salvarsan—namely, di-para-amino-arseno-benzene—or the base of intramine—namely, di-ortho-amino-thio-benzene; both are insoluble, or, in other words, cannot undergo electrolytic dissociation, yet when injected electrolytic dissociation must occur, as otherwise they would exert no therapeutic action. In the case of the di-para-amino-arseno-benzene, by inserting into its molecule two hydroxyl groups, electrical dissociation will occur in water, where there are free hydrogen and hydroxyl ions, and the dissociation will be greater if a salt of the base is used. Hence the reason for the insertion of the hydroxyl groups in salvarsan and the formation of the hydrochloride, two steps which really are not necessary, so far as the therapeutic action of the drug is concerned. Before an explanation as to how electrical dissociation of an insoluble body like intramine occurs *in corpore*, it will be as well to show how electrical dissociation of a simpler body occurs.

The solubility of benzoic acid in water, for instance, can be followed by the following equations taken from an article by Michaelis in the "Handbuch der Biochemie"

$$\frac{[\text{Acid anions}] \times [H\cdot]}{[\text{Non-dissociated acid}]} = K$$

In the above, K is the dissociation constant of the acid. The concentration of the non-dissociated acid is equal to the "partial solubility" of the acid, which can be designated as λ, and transformed into the following equation:—

$$[\text{Acid anions}] = \frac{K.\lambda}{[H\cdot]}$$

The "total solubility" of the acid can be given the capital letter Λ, and the equation will now run:—

$$\Lambda = \lambda + \frac{K.\lambda}{[H\cdot]} = \lambda.\frac{[H\cdot] + K}{[H\cdot]}$$

The "total solubility" Λ is therefore dependent upon the hydrogen-ion $[H\cdot]$ of the solution, while the "partial solubility," λ, is constant.

Applying this to the solubility of an amphoteric electrolyte, it will be seen that the "total solubility" equals the "partial solubility" plus the concentration of the anions on the one hand and the kations on the other, in a saturated solution of the ampholyte;—the equation being as follows:—

$$\Lambda = \lambda + [A\cdot] + [A']$$

λ is always constant, therefore, when Λ is a minimum, $[A\cdot] + [A']$ is a minimum, and this is the iso-electric point. Therefore, an amphoteric electrolyte has its minimum solubility at that hydrogen-ion concentration which corresponds to its iso-electric point. Every amphoteric electrolyte has two dissociation constants, an acid (K_a) and a base (K_b) which regulate the solubility.

From this it is clear that the lipoid-globulin particles in serum are kept in solution by the ions attached to them. It is also clear that the hydrogen-ion concentration must be constant, otherwise the lipoid-protein would begin to become precipitated, therefore, however big or however ionic the lipoid-protein molecules became, the acidic and the basic ions would always be so arranged that the hydrogen-ion concentration's optimum would be maintained. This is the reason why the hydrogen-ion concentration of a syphilitic serum is the same as that of a normal serum, although in the two cases the molecules themselves are so different.

From the above it will be seen how intramine gets into solution *in corpore*. In virtue of its amino groups it becomes adsorbed to the lipoid-globulin molecules, and since these molecules must maintain the hydrogen-ion concentration's optimum, various electrolytes will be discharged, a preponderance of acidic over basic or *vice versa*, according to the charge of the prevailing electrolyte in intramine. In the maintenance of this normal hydrogen-ion concentration intramine gets into "solution."

The greatest influence, then, of the hydrogen-ion concentration will be that which it exerts upon the precipitation of colloidal solutions—an influence which will be frequently shown and alluded to as we proceed.

Suspensoids and Emulsoids.

The one great distinction which all observers draw between a colloidal "solution" and a true solution, is the difficulty with which the former and the ease with which the latter dialyses. Another, and perhaps greater, distinction is, that a colloidal "solution" is really a suspension. A suspension is a microheterogeneous system—that is to say, a finely divided phase—the solubility of which in water is *nil*, but which is suspended in an aqueous phase. Colloids which fulfil the above definition are known as suspension colloids, or suspensoids, while proteins, which are in part soluble in water, are known as emulsion colloids, or emulsoids. Emulsoids come midway between suspensoids and crystalloids. There is no hard-and-fast line between these three physical states, since emulsoids may, in some cases, be solutions of substances of high molar weight.

There are three great differences between emulsoids and suspensoids, differences of density, viscosity, and surface tension. Surface tension is the important one from our point of view. Speaking generally, the surface tension of suspensoids is the same as that of water, while the surface tension of emulsoids is usually much smaller than that of water. It is owing to this difference that suspensoids are not so readily adsorbed as emulsoids. The smaller the surface tension of a saturated solution, the more this solution approaches a colloidal "solution." This property which, so to speak, stamps a colloidal "solution," consists in the greater tendency the solid phase has, first, to remain suspended in high dispersity in the saturated solution, and secondly, when it is precipitated, for the precipitate to be amorphous. Hence the explanation for the peculiar

properties witnessed in proteins. In the case of protein "solutions," which have a small surface tension, the ions attached to the solid particles play a very important rôle. As the solid particles are fully electrically charged, a fact which keeps them in suspension *in corpore*, the surface tension vanishes, and the particles remain still more firmly in suspension. If the particles become in any way de-ionised, the surface tension increases, and the small particles increase in size, with resulting agglutination and amorphous precipitation.

From these few remarks concerning surface tension it will be readily seen why agglutination, complement-fixation, and precipitation should be the pictures given by the immunity reactions *in vitro*. It will also be seen that all three are different phenomena of the same physical action and that, unless instantaneous death occurs, as is seen, for instance, in anaphylactic shock, none of these phenomena occurs *in vivo*.

The maintenance of this surface tension is dependent upon a certain hydrogen-ion concentration. Therefore the normal hydrogen-ion concentration serves the purpose of keeping the lipoid-globulin colloidal particles in "solution" in the serum. Now, as to how this normal hydrogen-ion concentration is maintained.

Maintenance of Normal Hydrogen-ion Concentration.

The lipoid-globulin particles form the internal, or, as it is sometimes called, the disperse phase, and the serum in which they are, forms the external phase or the dispersion medium, therefore the normal hydrogen ion-concentration will be maintained on the one hand by the internal phase and on the other by the external phase. Although the action of each will be discussed separately, the two actions are, of course, interdependent.

There are what may be called two systems which maintain the normal hydrogen-ion concentration in the external or continuous phase: (1) the phosphate system, (2) the bicarbonate system. The phosphate system is made up of an acid and a basic sodium phosphate, the former being the mono-sodium phosphate (NaH_2PO_4) and the latter the di-sodium phosphate (Na_2HPO_4). Like water, these two salts are continually undergoing electrolytic dissociation, as in the following equations:—

$$NaH_2PO_4 = Na^{\cdot} + H^{\cdot} + HPO_4''$$
$$Na_2HPO_4 = Na^{\cdot} + Na^{\cdot} + HPO_4''$$
$$H_2O \rightleftharpoons H^{\cdot} + OH'$$
$$H_2O + HPO_4'' = H_2PO_4 + OH.$$

The bicarbonate system is very similar, as the following equations show:—

$$NaHCO_3 = Na^{\cdot} + HCO_3'$$
$$H_2CO_3 = H^{\cdot} + HCO_3'$$
$$H_2O \rightleftharpoons H^{\cdot} + OH'$$
$$H_2O + HCO_3 = H_2CO_3 + OH'$$

In this way a balance is maintained between the hydrogen- and hydroxyl-ion concentration of the disperse medium. From the equations just given the number of hydrogen ions formed is the same as the number of hydroxyl ions, but as I have already said, there are more hydroxyl than hydrogen ions in the serum. How, then, is this excess formed? Cells have functions to perform, for the performance of which they must have active oxygen. After the oxygen has been used up it is discharged as carbon di-oxide. The presence of carbon di-oxide in the serum would increase the concentration of hydrogen bicarbonate (HCO_3'). This hydrogen bicarbonate would undergo electrical dissociation with water into hydrogen carbonate (H_2CO_3) and hydroxyl-ion (OH'), thus giving rise to an excess of hydroxyl ions in the serum.

The normal hydrogen-ion concentration of the internal phase is maintained by the oxidase-reducase system, which I have already described. As the ferric hydroxide protein and the di-sulphide protein form active oxygen on the one hand and active hydrogen on the other hand, with the free hydroxyl and hydrogen ions formed by the electrical dissociation of the phosphate and bicarbonate systems with water, it will be seen that the maintenance of the hydrogen-ion concentration of the external phase and that of the internal phase are interdependent.

From here I must now turn to the Wassermann and other immunity reactions.

IMMUNITY REACTIONS "IN VITRO": COMPLEMENT-FIXATION TEST, WASSERMANN REACTION.

No object is served by my going into the various theories of immunity, as even Ehrlich's side-chain theory, a theory evolved on the work done mainly by Bordet, a Frenchman, recent as it is, is no longer tenable. Suffice it to say here that resistance depends upon protective substances which circulate in the serum. These protective substances are lipoid-globulin particles which emanate mainly from lymphocytes, and which exist in the serum as emulsoid particles.

These emulsoid particles form what is usually called the antibody. The term antigen is given to the foreign body (bacterium, red blood corpuscle, &c.) which stimulates the formation of the antibody. The union between the antibody and the antigen depends upon a third substance, which goes by the name of complement. Antigen consists of lipoid-globulin particles, and the antibody so constitutes itself that it possesses a stereo-chemical molecular configuration homologous to that of the antigen. Herein lies the explanation of specificity. Now specificity, contrary to general belief, is practically never absolute. For instance, the Wassermann reaction may be positive in all protozoal diseases; further, salvarsan produces changes in the plasma cells, as I have described, in syphilis, in other protozoal diseases, and sometimes in cases of tuberculosis, although to a much less degree. An emulsion of the spores from a culture of sporotrichum beurmanni can be agglutinated, not only by the serum from a case of sporotrichosis but also by the serum from other diseases caused by fungi—for instance, actinomycosis.

At first sight, Abderhalden's test for pregnancy appears to be specific, but syphilitic sera will give positive ninhydrin reactions with placental extract. It is interesting to note in this connexion, clinically, not only is the course of syphilis considerably modified in a woman who is pregnant, but women in general, at any rate, up to the time of the menopause, are not so severely affected by syphilis as men are.

The most rational explanation of these phenomena, to my mind, will be found in likening the arrangement of the amino groups in the lipoid-globulin molecule to the bricks in a house. The house, at first sight, is always the same, but the arrangement of the bricks with which it is built varies, making each house look slightly different when thoroughly examined. Specificity is caused by the variation in the arrangement of the bricks, which are the amino groups in the lipoid-globulin molecule. The range of specificity is unlimited, therefore the variation in the bricks is not so much the alteration of one brick as a change in the combination of several.

This being the case, it is possible for different infections to produce partly similar combinations of the groups which go to make up the lipoid-globulin molecules. The combination may be the same up to a point, and then the last few bricks may make all the difference. From this it may be inferred that some of the groups which go to make the syphilitic lipoid-globulin are also the same as some of those which go to make up the lipoid-globulin of the sera of women. In other words, there is a common combination of the groups somewhere in the molecules which constitute the lipoid-globulin of syphilitic sera on the one hand and the sera of women up to the menopause on the other hand, and that the combination becomes the closer in women who are pregnant.

Complement.

Having briefly referred to the nature of antigen and antibody, it now remains to discuss the nature of complement. The first to throw any real light upon the nature of complement was Ferrata, who succeeded by dialysis in dividing complement into two parts. Sachs and Altmann succeeded in separating these two parts, by first acidifying with weak hydrochloric acid and then neutralising the same. Liefmann and Cohn gained the same object by precipitation with carbon dioxide. These two parts received the names of middle piece and end piece, and were so christened by Brand. Brand found that the middle piece was attached to the globulin fraction of the serum, and that it was the middle piece which was fixed by the amboceptor and by the red blood corpuscles in the hæmolytic experiments. The end piece remained free until the middle piece was firmly fixed, and not till then did it become bound itself.

Michaelis and Skwirsky found that red blood corpuscles which had adsorbed amboceptor, and had been treated with mono- and di-sodium-phosphate instead of with complement, only fixed the middle piece of complement when it was added, leaving the end piece free to be collected if required.

Discussion then arose as to the nature of these two pieces. Sachs and Bolkowska pointed out that both pieces were thermolabile. Then Sachs and Teruuchi showed that, if guinea-pig's serum was inactivated by distilled water, further addition of sodium chloride failed to restore its action. Adding to such an inactivated serum some end piece often had the effect of restoring the complement action, adding some middle piece seldom did, while adding both always did. Liefmann and Cohn, as a result of several experiments, found that the quantity of middle piece fixed was infinitesimal, an observation which led them to suggest that complement was a ferment. Fränkel, using carbon dioxide to separate the middle and end pieces of complement, found that the end piece, or, as he called it, the albumin portion, increased the action of both split and intact complement. The middle piece, or, as the same observer called it, the globulin portion, prevented the action of both split and intact complement.

From the work of the observers mentioned, and of others who have confirmed them, it may be noted that the action of complement is that of a ferment, and that complement can be divided into two parts, both of which when added will always restore the action.

My own investigations into the nature of complement led me to believe that it was part and parcel of the antibody, that it was a ferment or catalyst, since its action depended upon concentration and not upon the absolute quantity used, and that it was probably linked on to the lipoid-globulin molecules by means of the ions. Further investigations showed me, not only that complement was an expression of the oxidase system, as I had previously thought, but of the reducase system also. In other words, I found that complement represented the balance between the hydroxyl and hydrogen-ion concentration of both the internal and the external phases.

Light is now thrown on the so called middle and end piece of complement. The middle piece is the oxidase-reducase system of the internal phase, while the end piece represents the hydrogen and hydroxyl ions of the external medium. If complement is divided into its two pieces the end piece alone may act feebly as complement, while the middle piece may act in the opposite direction, but when both pieces are mixed full complement action is again restored, a fact which clearly proves the statement I made earlier—namely, that the normal hydrogen-ion concentration of both the internal phase and of the external phase were interdependent.

From the remarks I have already made concerning the chemico-physical properties of emulsoids, added to which is the knowledge gained as to the nature of antibody, antigen, and complement, it will be clear as to what happens when these three substances meet, but the phenomena witnessed *in vitro* will not be analogous to those which occur *in vivo*, as it is only *in vitro* that one of them—namely, complement—is completely destroyed (excepting in the condition known as anaphylactic shock).

Experiments with Hæmolytic System.

Before discussing the phenomenon of adsorption in a case in which the antibody is specific, I will relate a few experiments I have made with the hæmolytic system. It was generally thought that for hæmolysis to occur in the presence of complement and of an antibody the antibody must be specific. Such is not the case, because hæmolysis will occur if colloidal aluminium hydroxide takes the place of the antibody. Colloidal aluminium hydroxide becomes adsorbed by the red blood corpuscles, but no change in surface-tension occurs, and therefore no hæmolysis, until complement is added. When this physical change takes place complement is destroyed. If a little glycine, albumin, gelatin, or agar is added to the aluminium hydroxide beforehand, even in the presence of complement, no hæmolysis occurs.

Aluminium hydroxide is a suspensoid, and therefore is very sensitive to electrolytes. In the presence of complement it will very quickly upset the normal hydrogen-ion concentration, with the result that the lipoid-protein particles will tend to reach their iso-electric point and will tend to become more suspensoid, phenomena which cause an alteration of surface-tension—hence hæmolysis.

Aluminium hydroxide glycine is an emulsoid, and therefore is not sensitive to electrolytes. Although aluminium hydroxide glycine is adsorbed by the red blood corpuscles, both being perfect emulsoid colloids, they are kept in "solution" by the normal hydrogen-ion concentration (complement), with the result that there is no change in surface-tension; hence hæmolysis does not occur.

In the case of a specific antibody, hæmolysis will occur in spite of the fact that the specific antibody is an emulsoid. If the antibody is very fresh and active, hæmolysis may not result; this is also often the case in other immunity reactions. Fresh specific serum may fail to give the agglutination and precipitation tests, and an active syphilitic serum may give a negative Wassermann reaction, showing clearly not only that immunity reactions *in vitro* are not analogous to what occurs *in vivo*, but also that death of the organism may take place without there being any apparent microscopic change in its form. How, then, does a specific antibody differ from aluminium hydroxide glycine? Specificity lies in the amino groups of the lipoid-globulin molecules, not in the amino groups as such, but only so far as they are combined with the carboxyl groups to constitute the lipoid-globulin molecule. Permeability is regulated by the carboxyl groups, but again only in virtue of their combination with the amino groups.

The phenomenon of adsorption is especially marked with emulsoid colloids, in view of the amino groups. Hence, when a specific antibody meets its specific antigen *in vitro*, adsorption takes place, and the adsorbed lipoid-globulin molecules, owing to a certain de-ionisation which occurs as the result of the adsorption, destroy the complement and become precipitated, or, strictly speaking, they become more suspensoid, since they are brought nearer to their iso-electric point, with the result that a change is brought about in the surface tension. Any interference with the amino groups at once destroys the specificity.

Wassermann Reaction.

So far as the rationale of the Wassermann reaction is concerned, the only data required are: (1) the active principle of the antigen; (2) why syphilitic sera should, in preference to other sera, adsorb the antigen. Various investigations showed that the active principle in the antigen was nitrogen, in the form of an amino-acid, but that another factor played a rôle, since the conversion of the amino groups into methylene imino groups, which may be done by formalin, as shown in this equation—

$$H.COH + R.NH_2 = R.N.CH_2 + H_2O,$$

increased its antigenic properties.

The methylene imino groups are larger than the amino groups and are more suspensoid in character; therefore the addition of formalin increases the size of the colloidal particle. Adding cholesterol to the antigen increases its adsorptive capacity. The syphilitic antibody (lipoid-globulin particles) in the Wassermann reaction, since it is a non-specific reaction, is best designated as the reacting substance, or "reagin" for short. Syphilitic lipoid-globulin is peculiar, in that its particles are larger than those from most other diseases; indeed, protozoal diseases can be roughly separated from bacterial diseases by the difference in the size of the lipoid-globulin particles, and the increased adsorptive power of the molecules of the former over those of the latter. These two observations are doubtless the most important in the whole of my research work, and they are two which can be easily proved. Ultramicroscopic examination proves them both at once, but the most conclusive proofs are, that a syphilitic serum contains more protein nitrogen, more adsorbed amino nitrogen, and more adsorbed ions than normal serum.

From what has already been stated, it becomes now perfectly clear why complement should be destroyed when a big emulsoid particle like syphilitic lipoid-globulin adsorbs an emulsion colloid like antigen, which is more suspensoid than a specific antigen. As the lipoid-globulin molecule is bigger in late than in early cases of syphilis, it will follow that the Wassermann reaction will be more marked in that stage in which there are the fewest number of organisms. Since, moreover, an uncombined carboxyl group may prevent a syphilitic serum from giving a positive reaction, in virtue

of the effect it has upon surface tension, and owing to the fact that once the lymphocytes have had to form such lipoid-globulin particles they may go on doing so although there may be no more organisms to kill, it necessarily follows that a negative Wassermann reaction is always valueless, and that a positive Wassermann reaction does not invariably indicate that the patient has active syphilis, or that he requires further treatment.

Normal sera will always give a positive Wassermann reaction if the size of the lipoid-globulin molecule is made sufficiently big—or, better to say, rendered less emulsoid—than it is under normal circumstances. Heat will do it; so will alternate freezing and thawing; so will a plus or minus change in the atmospheric pressure; and so will the addition of a non-colloidal body like barium sulphate.

Nature of Immunity Reactions.

Therefore, the Wassermann reaction is a purely physical reaction, while the specific complement-fixation test is a chemico-physical reaction, as it depends upon an homology which exists between the amino groups of the antigen and the antibody. Neither the specific nor the non-specific complement-fixation test shows exactly how an organism is attacked by the resisting substance in the body. The agglutination test throws no further light on this point, nor does the precipitation test, so let me close this part of the subject with the remarks, before discussing the main point in question, that an alexin, an opsonin, a bacterio-tropin, an amboceptor, an agglutinin, a precipitin are all the same substance, and the part exhibited by each is only an exhibition of different physico-chemical phenomena possessed by that one substance, which is a lipoid-globulin, and is best called the resisting substance.

Finally, no proteolytic ferment comes into any of the reactions, and Abderhalden's test—which, by the way, is not specific, since a syphilitic serum will give a positive reaction with any organic extract, for the same reason as it adsorbs the antigen in the Wassermann reaction—is merely a chemico-physical reaction, which is carried a step further than the other immunity reactions. *In vivo* no immediate change results from the adsorption of antigen and antibody. *In vitro* one change is agglutination, a further change is precipitation, a further change still is hydrolysis. If a dialyser be used the precipitated lipoid-globulin which has resulted from the adsorption with its antigen, owing to its becoming more crystalloid, will allow some of the amino groups to pass through the fish bladder and give the ninhydrin reaction.

An outstanding feature in my work on the chemico-physics of immunity is that, in chronic infections, the changes produced in the lipoid-globulin particles are often in an increasing ratio, in a ratio which is independent of the number of organisms to be killed. In other words, I have found that if the stimulation of the lymphocytes—and, for that matter, of other cells in their own case—to form protective substances is sufficiently prolonged the molecules of the cells themselves will increase in size and become more like suspensoids, in which condition they will act as foreign bodies. I have gone fully into this subject in Part II. of my book, "The Biology and Treatment of Venereal Diseases," as I feel sure it is research on these lines which will unravel the mysteries of malignant disease.

THE MODE OF ACTION OF THE RESISTING SUBSTANCE "IN CORPORE."

A discussion on this subject at once introduces the problems of natural and artificial immunity, about which a few words must be said. There are many examples of natural immunity: for instance, cold-blooded animals are immune to infection by organisms which produce diseases in warm-blooded animals, and *vice versa*. In any case, bacterial infections are more common in warm-blooded than in cold-blooded animals.

Diseases of birds, such as psittacosis, &c., cannot be conveyed to mammals. Furthermore, carnivorous animals are more or less immune to those bacteria which cause diseases in herbivorous animals, or in man, who subsists on a mixed diet. Man appears to be absolutely immune to rinderpest, and all but the higher mammals to such diseases as scarlet fever and measles. Natural immunity, such as above described, is really only an apparent immunity, and is not analogous to the immunity produced by a bygone infection.

The food on which the animal lives plays a rôle; also its temperature, since, if the temperature of cold-blooded animals be raised, they can develop tetanus, a disease to which they are, under ordinary circumstances, immune. There is even a difference in race resistance—a difference which, in some cases, is probably due to the food upon which the animal lives. For example, Yorkshire pigs are more resistant than other breeds to a special form of erysipelas from which pigs suffer. The older races of cattle are more disposed to tuberculosis than the new races or species. Again, different breeds of mice react differently to anthrax, and to an infection caused by the micrococcus tetragenus.

So far as syphilis is concerned, it is certain that all races, irrespective of climate and food, are equally prone to be infected with it. The reason why Livingstone thought that pure-born Africans were immune to syphilis was simply because the races to which he referred had never been in contact with white people, and therefore had never run the risk of catching the disease. Before the white man settled in Uganda syphilis was unknown there; now it is well-nigh a plague amongst the natives. Monkeys can be easily infected with syphilis, but it is doubtful whether the lower mammals can. Because rabbits develop chancres and regional adenitis after subcutaneous injections of spirochætal material, and general lesions, if the spirochætal emulsion be injected intravenously, it does not follow that the rabbits have developed syphilis.

Probably, if a sufficient quantity of rinderpest infection were injected into a human being, he could be made to develop symptoms simulating the real disease. There is no doubt that infections can be produced in man or in animals which, under prevailing conditions, have a natural immunity against such; therefore natural immunity is probably due to certain physical conditions which naturally exist, and is not analogous to the immunity which follows an infection, an immunity probably due to the artificial production in the serum of protein colloidal particles which possess the same stereo-chemical molecular configuration as the protein molecules of the parasites.

Broadly speaking, if an individual has had a disease he is less likely to contract the same disease again. The period at which the first attack is cured—that is to say, whether soon or late after its onset—has an influence upon the degree of the immunity acquired. The severity of the attack also has an influence, and so has the position in the body where the organisms are first implanted. An acquired immunity is not absolute, since the patient can usually be infected, provided a sufficient quantity of the infective material gets into his system. The main difference between acquired and natural immunity is that in the former the immunity is specific, and in the latter it is not.

The points brought out from the few remarks made show that immunity depends upon a certain physical state of the host; upon the position where the organisms are implanted; upon the number of organisms implanted; and upon whether the molecular configuration of the lipoid-globulin particles in the serum of the host is homologous to that of the lipoid-globulin molecules of the parasite.

Primary Struggle and Turning of the Tide.

When a man runs the risk of becoming infected with syphilis there must always be, first of all, a struggle between the cells of that man and the spores of the leucocytozoon. If the former win, then, of course, there is no infection. Assuming that the latter win, the spores having gained a firm foothold, will develop at their host's expense and produce a lesion, which we call a chancre. A further development of these spores will lead to a generalisation of them in the body of the host, with a result that lesions will occur all over the body. Instead of the development going further still the tide turns in favour of the host, and the number of the parasites gradually becomes lessened, with the result that the lesions disappear. The turning of the tide is due to the fact that the host's lymphocytes have been able to manufacture lipoid-globulin particles, the molecular configuration of which is homologous to that of the lipoid-globulin molecules of the parasite.

Two questions arise now: (1) What is the nature of the primary struggle? (2) What is the *modus operandi* of the turning of the tide?

In the remarks I have made already it will be remembered that there are only two factors which come into play in the

adsorption between antigen and antibody: (1) hydrogen-ion concentration (oxidase-reducase system); (2) specific amino groups. In the primary struggle the second factor cannot possibly play a rôle, since it takes some time for the amino groups in the lipoid-globulin molecules to be arranged in a specific manner. Moreover, the primary struggle is a local affair, a struggle between spore and cell, while the turning of the tide is a general affair—a struggle between the lipoid-globulin particles of the serum generally, of the plasma cells locally, and those of the parasites.

When a syphilitic spore enters the human body, in order to develop it must enter a connective-tissue cell or an endothelial cell. To enter a cell it must alter the surface-tension of that part of the cell where it is going to enter, and this will mean a local disturbance of the normal hydrogen-ion concentration. It is absolutely certain that all cells require and use oxygen, and probably certain that all cells (animal) in exchange for oxygen exhale carbon dioxide. Should a spore be able to take some of the oxygen required by the cell it hopes to enter, the normal ratio between the oxygen and the carbon dioxide of that cell will cease to exist, with the result that the normal hydrogen-ion concentration or the oxidase-reducase system will be locally deranged temporarily, with the result that the spore wins, since the local surface-tension of the cell will be such that the spore is practically drawn into it.

How this temporary derangement of the oxidase-reducase system can be directly prevented is not at present clear, but from analogy to experiments I have undertaken in another direction (anaphylaxis) the derangement can be prevented indirectly by increasing the stability of the permeability which can be done by intravenous injections of calcium chloride.

The *modus operandi* of the turning of the tide is probably as follows: Both the lipoid-globulin particles of the syphilitic phases and of the serum have an oxidase-reducase system. In the case of the former, the active oxygen is used by the nucleus for propagation purposes. In the case of the latter, there being no nucleus, the active oxygen will be used for that purpose for which the particles exist—namely, for the purpose of adsorption. Since the amino groups have the same arrangement in the two kinds of lipoid-globulin, the necessaries for the physical action of adsorption will be at their best As the active oxygen in the host's lipoid-globulin will only be required for this physical action, it will follow that the host's lipoid-globulin has an advantage over that of the parasite, with the result that the changes which the spore, in the primary struggle, caused the cell it was attacking to undergo, will now be visited upon the parasites themselves.

If these views are correct, we should be able to forestall the turning of the tide and to accelerate it by increasing the amount of active oxygen in the lipoid-globulin particles in the serum of the host. This can be done (1) directly, by the administration of strongly adsorbed metallic compounds, which act as peroxidases and produce active oxygen; (2) indirectly, by the administration of a strongly adsorbed non-metallic compound, which acts as a disulphide and produces peroxide and active hydrogen.

This now brings me to discuss the rationale of chemotherapy in syphilis.

DOCTORS AND NOTIFICATION FEES.—At a meeting of the Executive Committee of the National Medical Union, held at 346, Strand, on May 4th, the following resolution was passed:—

That the Executive Committee of the National Medical Union express their strong disapproval of the action of the Local Government Board in attempting to effect any reduction in the notification fees. They urge that all local non-panel bodies should pass strong resolutions on this matter and forward them direct to their local Members of Parliament, and that each secretary be advised to circulate a petition among the local profession and forward these petitions when complete to the secretary of the National Medical Union, 346, Strand. Such resolutions and petitions to be then referred to the Parliamentary Committee of the Union, with the object of taking such further action as may be necessary to place the matter before both Houses of Parliament.

THE LATE DR. GEORGE EDWARD LANYON, J.P.—Dr. George Lanyon, medical officer of health of the Port of Falmouth, who died suddenly at his residence in Falmouth on April 17th, in his fiftieth year, was for 20 years in partnership with Dr. W. Banks, of Falmouth. Later he practised in the town single-handed and had an extensive connexion. Besides being medical officer of health for the Port of Falmouth, he had recently been appointed a magistrate for the town, where he was highly respected. He leaves a widow and five young children.

MALIGNANT DISEASE OF THE NOSE OR ACCESSORY SINUSES.

ADVANTAGES OF OPERATION THROUGH THE FACE (MOURE'S OPERATION OR LATERAL RHINOTOMY); RECORD OF TWO CASES WITH NO RECURRENCE AFTER 5½ AND 3½ YEARS.

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Introductory.

THE recent progress of rhino-laryngology has been rapid. The records of much of it—such as endoscopy of the air and food passages, the removal of foreign bodies, and the examination and treatment of diseases of the œsophagus—have spread beyond our special journals and societies and have become common knowledge through the articles in the weekly medical press. But much of the advance of specialism is still unknown to the medical public, and this seems a pity when a good deal of it might be done by the general surgeon who is willing to acquire some of the technique of rhino-laryngology. Those who have not the taste or the opportunity for gaining dexterity in these modern methods are doubtless glad to hear of the advances which have been made; for just as the general surgeon has, in certain directions, carried research and treatment beyond the line where physicians were able to take it, so the specialist has been able to carry further perfection into the work of the general surgeon.

Historical.

In this article I propose to refer to some improvement in the surgical treatment of malignant disease of the nose and its accessory sinuses. Before the days of rhinology patients would rarely think of consulting anyone for such complaints as nasal obstruction, catarrh, or epistaxis. Hence the sufferer from cancer of the nose seldom sought advice until he presented himself to a general surgeon with some external manifestation of his dread disease. By the time it had reached that stage it was perforce far advanced, and the general surgeon had no alternative but to hazard some extensive and disfiguring operation from the outside of the face. This generally took the form of excision of the upper jaw, which was done for disease within the antrum itself, or in order to traverse that cavity so as to get at the ethmoidal or sphenoidal cavities. Sometimes, when the growth appeared to be limited to the nasal cavities, it was approached either by turning the whole outer nose up on to the forehead, or by the operation of Ollier in which the nose is reflected downwards from its root. It is common knowledge that in all these operations one certain consequence was marked disfigurement, and rarely were there any enduring benefits. The operation of Rouge (sublabial rhinotomy) was a decided step in advance. It avoids all external disfigurement, gives good access to growths in the anterior part of the nasal chambers, and is neither difficult nor dangerous.

With the birth of rhinology cases of cancer of the nose came under observation sooner, and some improvement ensued from earlier diagnosis. Operative measures carried on through the nostrils were certainly not mutilating, though it was only occasionally that they could claim lasting results. This is readily realised when we recollect how vascular are these growths, how difficult it is in the narrow, bony cavity of the nose to manœuvre round them, and how rapidly fungation takes place in a cancerous growth when it is only partly excised and is left exposed to the air. The route of approach *via* the nostril to these growths is difficult and oblique when they originate, as so many do, in the ethmoidal region and the antro-nasal wall. Now, it is precisely for malignant tumours originating in this region, as well as for those starting in the roof of the nose, in the antrum, or in the sphenoid, that I would particularly recommend the following operation.

Lateral Rhinotomy or Moure's Operation.

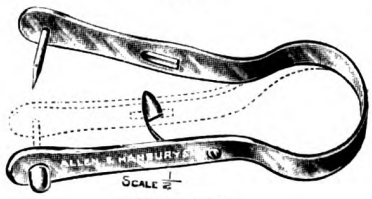
This operation was recommended as long ago as 1853 by Michaux, but for my first knowledge of it I am indebted to Moure, of Bordeaux.[1]

[1] Revue Hebd. de Laryngol., tome xxii., 1902, Oct. 4th, p. 401.

Preparation.—The interior of the nose is prepared 30 to 60 minutes before operation by coating the mucous surface with small pieces of one-inch ribbon gauze, saturated with equal parts of adrenalin and 5 per cent. solution of cocaine. These are tucked round the growth on the affected side, but it is well to "paper" the septum and even the nasal cavity on the healthy side, as this helps in checking hæmorrhage and certainly aids in diminishing shock.

When the patient has been placed under chloroform, two tethered sponges are introduced into the postnasal space. Each of these is made of honeycomb sponge, compressed to about the size of a walnut, attached to a piece of tape, introduced through the mouth into the nasopharynx, and tucked in so as to fit the posterior choana snugly. A clip is passed through the tongue, which is drawn forward, so as to allow of the administration of chloroform through the mouth. (Fig. 1.) If the operation is being performed for a growth which projects backwards through the choana or originates in the roof of the nasopharynx, or if the surgeon wishes to be able to introduce his left forefinger through the mouth into the postnasal space to steady the growth from behind, then it may be preferable to perform a preliminary laryngotomy and plug the entrance to the larynx with a tethered sponge, while the anæsthesia is continued through the laryngotomy tube. In one or other of these ways the inconvenience and dread of hæmorrhage is avoided, the anæsthesia can be quite smooth and free from anxiety, and the surgeon can operate thoroughly and comfortably.

FIG. 1.



Tongue clip

Operation.—Two incisions are started on the affected side, below the inner extremity of the eyebrow and halfway between the inner canthus of the eye and the centre of the root of the nose. (Fig. 2.) From this point one incision curves outwards below the lower eyelid to the prominence of the malar bone, and the other descends along the junction of the nose and cheek to the nasal orifice. If the growth has approached the nostril or is thought to be attached to the floor of the nose, it is well to carry the incision right into the vestibule, so as to detach the lobe of the nostril on that side, as in Fig. 2. But if the growth is in the higher or deeper parts of the nose there is no necessity to carry this descending incision further than the furrow behind the ala naris. (Cf. Fig. 10.)

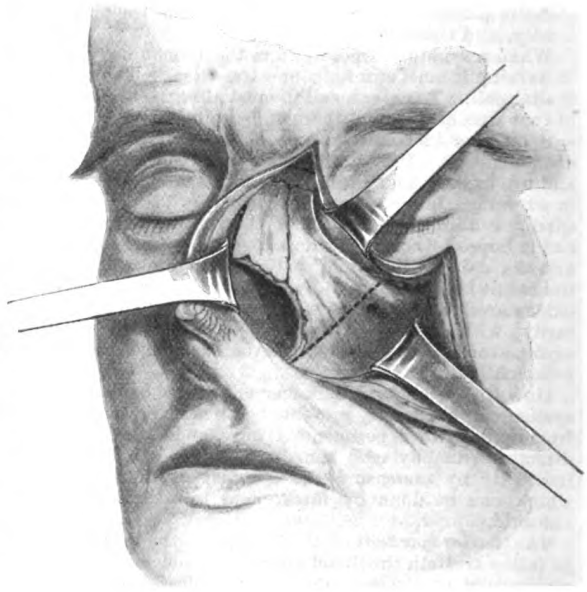
FIG. 2.



Moure's operation. Skin incisions.

Both these incisions should carefully follow the natural creases on the face, the upper one curving along the junction of the lower eyelid with the face, and the vertical one lying in the wrinkle which is seen in many elderly faces along the side of the nose.

FIG. 3.



Moure's operation. Skin flaps have been retracted and the dotted lines show where the bones should be chiselled through.

These incisions are carried down to the bone and, with suitable periosteum detachers and raspatories, a triangular flap of skin and soft tissues is turned downwards and outwards. (Fig. 3.) The pyriform opening of the nose should be defined, as well as the margin of the orbit, the ascending process of the superior maxilla, and its junction with the frontal and nasal bone. This latter bone is exposed right up to its junction with its fellow by reflecting the flap of skin, soft parts, and periosteum on the nasal side of the field of operation. With chisel and hammer the bone is now divided along three lines: (*a*) the first divides the nasal bone from its fellow, just external to the site of the nasal septum; (*b*) the second passes outwards from the upper part of this division into the orbit and follows the line of junction of the frontal bone with the nasal and maxillary; and (*c*) the third passes from the lower and outer corner of the pyriform opening upwards and outwards into the orbit. In this last cut it is well to try and avoid the infra-orbital nerve in its canal, but this cannot always be respected. The piece of bone included in these lines is now seized with lion forceps and twisted out. Immediately below it we come directly on the ethmoid region, the antro-nasal partition, and the upper part of the maxillary sinus. (Fig. 4.) The lacrymal canal should be defined and carefully retracted under the lacrymal bone, so as to avoid the risk of having afterwards a lacrymal fistula. The ethmoid can now be dealt with directly. On plucking it away with some instrument like Luc's forceps (Fig. 5) we are able to see into the maxillary sinus from above, like looking into an egg-cup. This same clearance of the ethmoid brings the front wall and orifice of the sphenoidal sinus so well into the field that it is now hardly 1 inch distant from the surface, instead of the $2\frac{1}{2}$ to $3\frac{1}{4}$ inches which is the average distance from the anterior nares. This dissection also exposes the roof of the nose. Diseased growth is attacked with Luc's forceps, conchotomes, sharp spoons, or ring knives, and can readily be followed back into the nasopharynx and sphenoid, outwards into the orbit, and downwards right on to the floor of the nose and the maxillary sinus. If required, the whole of the orbital, nasal, and facial walls of the latter cavity can be

removed with bone forceps. If the growth is attacked boldly and cleared away quickly I have not found the hæmorrhage alarming. It can be controlled by pressure and packing with 2-inch ribbon gauze, moistened with adrenalin or 5-volume peroxide of hydrogen. Thanks to the two postnasal sponges, there is no trouble with blood descending into the air passages.

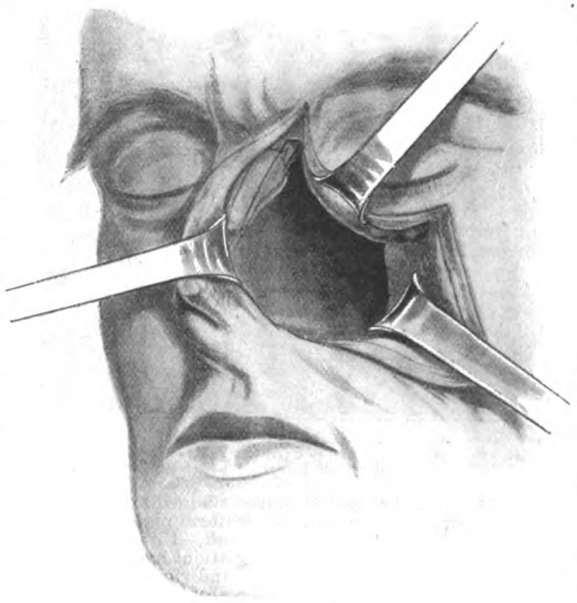
When the operation is completed and the bleeding arrested the skin incisions are carefully brought together with silkworm gut or horsehair sutures. Dressings on the face are not required; the wound glazes over with its own serum and heals up by first intention like a shaving cut. It may be protected with a pad of dry gauze until the patient recovers consciousness. It is also well to dispense with any dressing or plugging inside the nose, and to leave the cavity quite alone for four or five days. If oozing of blood should persist at the end of the operation, a piece of 2-inch ribbon gauze may be packed on to the spot and led out into the nostril, through which it is removed within 24 hours and not replaced. The postnasal plugs are, of course, removed before the patient leaves the table.

Progress.—The wound on the face heals up in a few days, and the patient may be about within a week (see Fig. 6). There will be some blood-stained discharge from the nostril for two or three weeks. The patient should avoid blowing the nostril carelessly during this time, so he must be instructed to suck the discharge backwards into his throat, while he is also relieved with nose lotions or sprays of some warm alkaline lotion (5 grains each of borax, soda, salt, and sugar to 4 oz. of warm water). If, when healing is completed at the end of from three to six weeks, there should be any crusting in the nose, this *toilette du nez* may have to be kept up indefinitely, but it is very remarkable that these cases seldom complain of the symptoms of atrophic rhinitis, although most of the turbinal tissue may have been removed. In this respect these cases differ very markedly from those in which the erectile tissue of the nose has been destroyed by syphilis or some pyogenic process.

Results.—Externally the scar within a few months is so slight as to be almost invisible. (Figs. 6 and 9.) In some of my cases it can hardly be discerned, even when carefully searched for. There is certainly no disfigurement and no interference with the muscles of the face. A few patients report a little epiphora in windy weather, and some of them draw attention to the formication or numbness of the upper lip and cheek on the affected side. But I have met with no neuralgia or similar trouble, even when the bone with the infra-orbital canal in it has been removed.

Internally there is a free thoroughfare through the nasal chamber on the diseased side. This secretes sufficient mucus for lubrication, and yet there is no crusting. Loss of smell is never complained of if the septum has been respected. In successful cases the enlarged nasal cavity presents a perfectly healthy surface, and in all its anfractuosities it is now easy to keep a watchful eye for any appearances of recurrence.

FIG. 4.



Moure's operation. Exposure of the nasal and maxillary cavities through the side of the nose.

Complementary Operations.

My present purpose is only to call attention to this particular operation, but, of course, it can be extended to meet the variable conditions met with, or combined with other operative steps. Thus, for instance, if it is found that the disease has deeply invaded the orbit this cavity can be cleared out through the same incision, preserving the lower eyelid, while, if necessary, sacrificing the eye. The nasal septum can be removed if the growth has attacked it. The antrum might be further dealt with by an incision through the canine fossa, although I have always found that the access to the sinus obtained by a Moure's operation could not be improved upon. This may also be combined with what is known as Denker's operation. If the floor of the nose is found to be invaded the addition of a Rouge's operation can be made.

Ultimate Results.

In all cases there is no mutilation or disfigurement. Patients will readily consent to the operation. They are left with an intact roof to the mouth and require no troublesome obturator, as in the old operation of excision of the upper jaw. It is much easier after a Moure operation to keep a direct look-out in the nose and its accessory cavities for any suspicion of recurrence. Recurrences are more easily dealt with, either through the nasal orifice or by repeating the lateral rhinotomy, and patients are less likely to object to this than to a further facial disfigurement.

Comparison.

When the upper jaw is removed for cancer of the maxillary sinus, the antro-nasal wall, the ethmoid, the roof of the nose or the sphenoidal body, it is, in the words of Macbeth, a "most bloody piece of work." It is chiefly the front maxillary wall and alveolus which are then removed, and this brings the surgeon but little nearer the origin of the growth, for which he has to grope in the dark depths of a bleeding cavity, where hæmorrhage is controlled with difficulty. If he can arrive at the ethmoid region or posterior part of the nasal chamber, it is difficult for him to do more than scrape away portions of the growth, and it is not therefore surprising that recurrence is almost the invariable rule.[2] Recovery is tedious and distressing, and, in any case, the patient is disfigured, and speech and deglutition are rendered uncomfortable. The treatment of any recurrence is almost impossible.

FIG. 5.



Luc's nasal forceps.

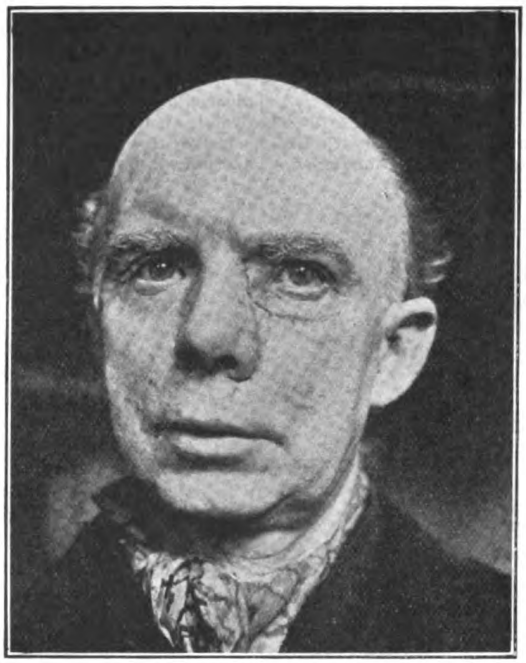
In Moure's operation hæmorrhage can be well controlled, free access is obtained directly on to the point of origin of the neoplasm, and it can, in many cases, be widely removed. Recovery is rapid. There is no blemish, and no interference with speech or swallowing. Recurrences can be more easily observed, and their treatment is facilitated by this operation. I feel very confident that any surgeon who becomes acquainted with this operation will seldom, if ever, perform another excision of the upper jaw for malignant disease in this region. The records of the two following cases will confirm

[2] C. H. Fagge in Burghard's System of Operative Surgery, vol. ii., p. 181. London: Hodder and Stoughton. 1914.

this. In the first, an endothelioma, there has been no recurrence of growth after five years; in the second, an epithelioma, the patient remains quite free at the end of three years.

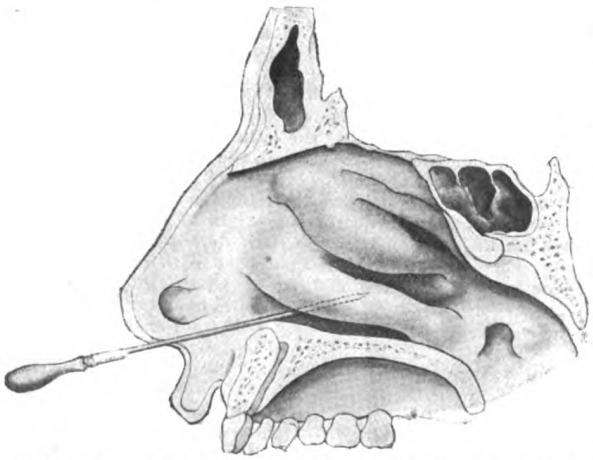
CASE 1. *Endothelioma of the ethmoid and antrum; Moure's operation; no recurrence after 5½ years.*—The patient, a lady aged 60, consulted me in December, 1903, for polypi in the right nostril. She reported that she had undergone numerous operations for this condition during the previous four years, by means of the cold wire and electric snares. I removed, under cocaine, what appeared to be simple polypi at three sittings in 1904. In May, 1905, I found that the right maxillary antrum was quite obscure to trans-illumination, and advised the patient to let me open and inspect it under chloroform, as there was little hope of a radical cure of the nasal polypi if this sinus were diseased. This advice was declined. Removal of polypi, under cocaine, was carried out three times in 1905, once in 1906, twice in 1907, and three times in 1908. In August, 1909, the polypus looked so fleshy, and bled so freely on removal, that I had it examined microscopically and received the report that it was "an endothelioma, somewhat resembling the similar growth found in the jaws. It is not encapsuled, and therefore highly suggestive of having malignant character" (T. G. Stevens). More extensive operation was recommended and

FIG. 6.



Moure's operation. Shows a patient 7 days after operation. (Mr. F. F. Burghard's case.)

FIG. 7.



Exploratory puncture and lavage of the maxillary sinus from the inferior meatus.

declined. But in November the opinion of Mr. S. G. Shattock was taken as to the microscopical specimen. He agreed that it was a typical specimen of lymphendothelioma, and this was further confirmed by the late Sir Henry Butlin, who pointed out that on our present knowledge prognosis in regard to this type of growth is almost impossible, some cases recurring rapidly, while others give excellent results.[3] On Nov. 10th, 1909, the patient was placed under chloroform and the right ethmoid well cleared. The removed growth again showed the microscopical characters of endothelioma.

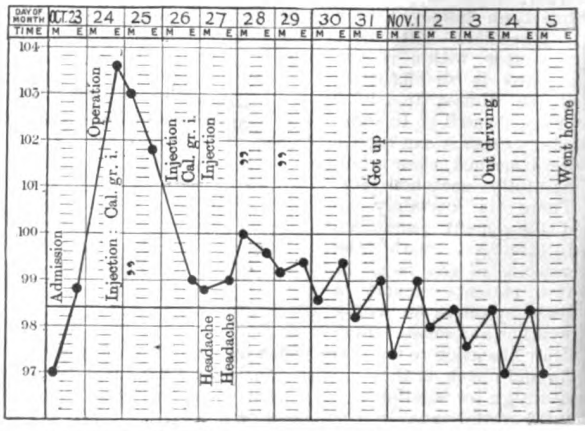
The ethmoid remained free and clear of disease for seven months, but in the summer of the following year (1910) the right nostril was found to be nearly blocked by a large, fleshy, suspicious-looking polypus. After consultation Sir Henry Butlin wrote to me as follows:—"If this lady were younger and more disposed to have a free operation, I should recommend that the interior of the nose should be exposed in the manner we discussed and that an attempt should be made to remove all the parts from which this disease is growing. There is no likelihood that your operation will completely clear it out." The "manner discussed" included excision of the upper jaw. The operation I had recommended was Moure's operation of lateral rhinotomy. The patient declined the risk and mutilation involved in Sir Henry Butlin's advice, and, in spite of the opinion of my senior and his high authority on malignant disease, I determined to make a trial of Moure's operation.

Operation.—This was carried out, with the assistance of Dr. Irwin Moore and Mr. H. L. Bates, at St. Albans, on July 4th, 1910—nearly seven years after the patient first consulted me and 10 months after the first manifestation of malignancy. There was much hæmorrhage, but it was under control. The right maxillary sinus was found to be filled with fleshy growth, which had eroded the floor above the alveolus in two places, destroyed the ethmoid, and extended along the roof of the nose back to the sphenoid. All was well cleared, although I was a little afraid that I had been obliged to leave a suspicious point close up to the cribriform plate in the roof of the nose.

Result.—Five and a half years have passed during which the patient has led a full and energetic life, and she is now hale and vigorous in spite of her 73 years. There has never been any trace of recurrence and not even a single polypus. The interior of the nose is moist and healthy, there is no scabbing, there is a clear view into the ethmoidal and sphenoidal cavities, and a large opening from the nose into the antrum. The patient has the full use of her alveolus, and, as she is well provided with sound teeth, she uses no tooth plate.

The patient was shown before the Clinical Section of the Royal Society of Medicine three years ago (Feb. 14th, 1913) and at the Clinical Congress of American Surgeons on July 29th, 1914, when it was universally agreed that it was difficult to detect any scar. Her only complaint is of slight numbness of the side of the face.

FIG. 8.



Moure's operation. Temperature chart of cerebral irritation.

CASE 2. *Epithelioma of left maxillary antrum; Moure's operation; no recurrence after three and a half years.*—The patient, a lady aged 50, noticed a swelling of her left cheek, with grumbling pain of a toothache character, in the early part of August, 1912. In the country she was X rayed,

[3] Vide lecture by Henry T. Butlin, THE LANCET, Oct. 19th, 1901, p. 1024.

nd the following report was ent: "X rays show a perfectly ormal condition of all the acial bones. The swelling is herefore supraperiosteal. She as been taking 5 grains of odide. The disturbance seems ess localised in the bone now nd more diffused in the sub- ntaneous tissues. I think it s of a low inflammatory haracter which should clear p under KI." (I quote this o show the undesirability of elying too much on X ray find- ngs.) At the end of September, uring my absence from ondon, the patient was seen n my behalf by Dr. Irwin Moore, who found a large, ense, deep-seated swelling in he left cheek over the canine ossa, not attached to bone and ossibly cystic. Transillumina- ion showed the left antrum o be absolutely opaque. There was some muco-pus in the left middle meatus and the middle urbinal was polypoid. The eft antrum was explored with hollow needle from the nferior meatus and washed hrough; no pus was expelled, ut it was noted that there was considerable bleeding on withdrawing the needle. (Fig. 7.) An exploratory opera- ion was carried out by Dr. Irwin Moore on Sept. 26th, 912. An incision was made under the left cheek over the anine fossa, as in the first step of a Caldwell-Luc operation, nd the cystic-like swelling was incised and curetted. A arge amount of semi-gelatinous material was removed and he free hæmorrhage was checked by gauze plugging. The one appeared quite healthy. A microscopical examination f the growth by Dr. d'Este Emery disclosed a glandular epithelioma.

On Oct. 15th, 1912, I found the patient was puffy all over the left cheek, with loss of definition of the upper jaw. The region of the canine fossa was soft and infiltrated. Trans- illumination showed complete obscurity of the left antrum. A large polypus was visible in the left middle meatus. I recommended a Moure's operation, and this advice was con- firmed by Mr. F. F. Burghard, who saw the patient with me.

On Oct. 23rd, with the help of Dr. Irwin Moore, I performed a lateral rhinotomy. The left maxillary sinus was crowded with malig- nant growth which had eaten through the canine fossa and the naso-antral wall. It was well cleared from the antrum and the ethmoid, and I have a bottle containing some ounces of the removed growth. The infra- orbital nerve had to be destroyed and the lac- rymal duct was exposed but left intact. The face was stitched up with horsehair. Next day the patient was markedly and alarmingly changed. Instead of being bright, vivacious, and chatty as usual, she was dull, inattentive, silent, and restless. She could easily be roused, but then her speech was hesitating and indistinct. The temperature was 101·2° to 103·6° F. and the pulse-rate was 120 (see chart, Fig. 8). She made no complaint. There were no localising symptoms. Fearing that meningeal infec- tion had taken place through the sheaths of the olfactory nerve I asked Dr. H. Camp- bell Thomson to see the case and he kindly sent me the following report: "She is undoubtedly suffering from cerebral irritation and I think a little compression, but I don't think the signs at present warrant one making the dia- gnosis of septic meningitis. She strikes me rather as probably having some exuda tion either serous or possibly mixed with some blood, and this might have easily occurred as the result of the disturb- ance of the growth and mem- branes. If this is so the con- dition is more one of œdema, and, though very serious, is not such a bad look-out as meningitis. I should not there- fore at present regard the case as hopeless, though I am not very optimistic about it." But, happily, within 24 hours there was an im- provement and the temperature was falling; at the end of 48 hours it had reached 100°, and the patient was brighter and her speech was again clear. On the third day the temperature was 99° and, with re-awakened intelligence, she complained of severe headache on the left forehead. On the eighth day the temperature had become steadily normal and the patient was out of bed. Her convalescence was uninter- rupted and she left the nursing home on the twelfth day. The patient was given calomel, bromide, and polyvalent antistrepto- coccic serum, but I do not claim any special effect from the latter. The microscopical re- port of the removed growth was as follows: "The growth is in- filtrating the tissues freely and the latter are densely crowded with small round cells. There are no cell nests, but the growth is un- doubtedly a carcinoma of a squamous-cell type."

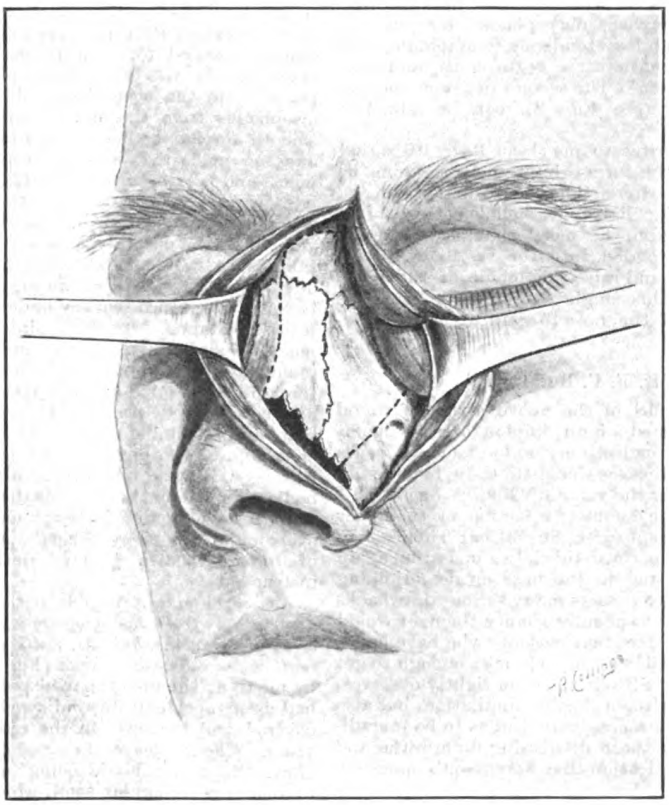
Result.—For a few months there was a puffiness of the lower eyelid, similar to the condition we some- times see in the upper eyelid after an external frontal sinus opera- tion. I imagine it is connected with trophic changes or with the lymphatic circulation. This has quite dis- appeared. There has been no neuralgia, although I had to ex- pose and destroy the infra-orbital nerve on the face. There is a slight amount of epi- phora on cold and windy days. The lac- rymal canal was re- cognised and left uninjured at the opera- tion, so I think this lacrymation is due to a little displace- ment of the cana- liculus by contraction of the scar.

FIG. 9.



Moure's operation. Shows the scar a few months after operation on the left maxillary sinus.

FIG. 10.



Moure's operation. Shows the single incision recently recommended in this operation.

Three and a half years have passed; the patient has had no trace of recurrence; the left nostril is clear and moist with a good view of the ethmoid, a large opening into the antrum, and no suppuration or scabbing in the nose. She enjoys good health. She, also, was shown before the Clinical Section of the Royal Society of Medicine on Feb. 14th, 1913, and at the Clinical Congress of American Surgeons in July, 1914. There is no disfigurement and the scar on the face is now hardly noticeable and is much less perceptible than in the accompanying photograph, which was taken within a few months of the operation. (Fig. 9.)

Both the above cases are recorded at some length for the following reasons. They show that (*a*) both an endothelioma and a carcinoma in the nasal area are susceptible of satisfactory treatment by this method of operation; (*b*) a history of some standing (Case 1), or exteriorisation of the growth (Case 2), do not necessarily invalidate the good results; (*c*) dangerous, difficult, and disfiguring operations which were formerly tried can be superseded by modern methods which in the hands of experts are easier, safer, cause no disfigurement, and promise a lasting cure. By giving a detailed description of these two cases some points of examination and diagnosis are suggested. An early diagnosis, especially in cancer of the maxillary antrum, is of great importance in securing a good result.

Some cases I have operated on more recently suggest that in most instances equally good results can be obtained by a still more limited incision. (Fig. 10.) A single cut is made from near the inner canthus of the eye, down the junction of the side of the nose with the face, to terminate in the alar groove just short of the nasal orifice. This cut is carried down to the bone, and the periosteum, with all the soft tissues upon it, is raised and peeled back as far as the line of the bridge of the nose internally, and externally as far as may be necessary towards the malar prominence. The soft tissues of the face are so lax and pliable that they can be raised and retracted outwards sufficiently to expose nearly all the area illustrated in Fig. 3. This single incision still further minimises the slight scar on the face; it does away with the puffiness of the lower eyelid which, otherwise, may persist for one or two months; there is much less tendency to epiphora; and it should be the only incision to begin with and also in any exploratory operation. The second incision, curving round below the eyelid (see Fig. 2), can be added if required.

Professor E. J. Moure writes to me (Dec. 18th, 1915) that he has now abandoned the infra-orbital incision which he had recommended in his earlier articles. He finds that the single incision shown in Fig. 10 is quite sufficient to give free access to the ethmoid region, the nasal chambers, and the sphenoid. It can be extended into the vestibule if it is found necessary to detach and raise the lobule of the nose. Moure also recommends this single skin incision and this route through the side of the nose to gain access to naso-pharyngeal fibromata.[4]

Remarks by Mr. F. F. BURGHARD.

Having read over the MS. of the above article, I would like to say that I have formed a high opinion of this operation. Since it was first brought to my notice some six years ago I have adopted it in all cases similar to those included in this paper. Since realising the value of Moure's operation I have not performed a single complete resection of the upper jaw, and I am in agreement with Sir StClair Thomson in thinking that I shall never perform this latter operation again for malignant disease arising in the nose or its adjoining sinuses; it appears to me to possess many serious drawbacks without a single advantage to counterbalance them. I would lay special stress upon the fact that patients who have had a Moure's operation done and who are unlucky enough to get recurrence, not only, as Sir StClair Thomson rightly observes, can have this dealt with without further mutilation, but also they can, even if the recurrence is so bad as to be ineradicable, go about free from those distressing deformities and defects in speech and mastication that Fergusson's operation entails.

[4] Duverger: Thèse de Bordeaux. E. J. Moure et Georges Canuyt, Revue de Chirurgie, vol. xxxiv., 1914, 10 Juin, No. 6.

ON THE REMOVAL OF FOREIGN BODIES FROM THE ŒSOPHAGUS AND BRONCHI:

WITH A DESCRIPTION OF SOME NEW INSTRUMENTS.

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THE direct method of examining the œsophagus and bronchi initiated by Killian, with the improvements by Brünings, Chevalier Jackson, Mosher, Guisez, Hill, and others, has proved the immense value of the œsophagoscope and bronchoscope in the surgery of foreign bodies in the food and air passages, so that during the past few years it has completely revolutionised our methods of treatment.

Improvements in instrumentarium and technique have not only greatly minimised the dangers, but enormously reduced the death-rate, in cases treated by this method. For example, in the case of foreign bodies in the bronchi, and left to themselves, the mortality used to be 58 per cent.; now, thanks to the direct method, if they are treated early, the death-rate is practically *nil*.[1] Cases, however, are still reported where death has occurred from the accidental swallowing of a tooth-plate or other foreign body, after ineffectual attempts at extraction through the mouth, followed in some instances by the external operation of œsophagotomy or gastrotomy. The blind use of bougies or probangs has also been the cause of many fatalities. The operation of œsophagotomy is by no means free from danger, for the risk of opening the cellular planes in the neck cannot be ignored. Statistics show that œsophagotomy for foreign bodies is followed by a mortality of from 12 to 20 per cent.—i.e., nearly 10 times as great as that following extraction by œsophagoscopy.

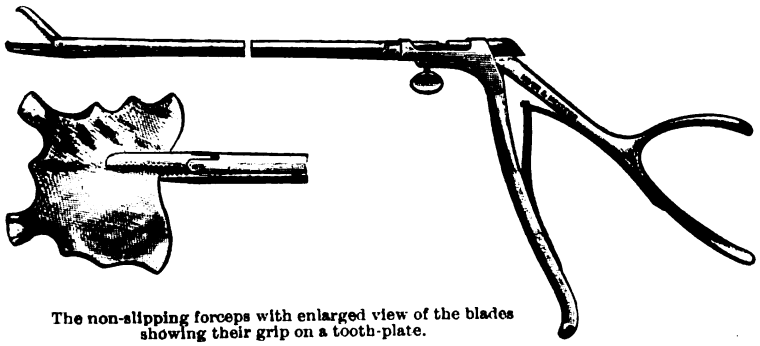
Killian has expressed the opinion that "if a foreign body is large, has sharp edges or hooks—e.g., dental plates—all attempts at extraction are dangerous and may easily lead to fatal injuries of the gullet and adjoining parts. In such cases œsophagotomy is indicated if the foreign body is situated no deeper than 24 to 26 cm. (10 inches) from the upper incisors; if deeper, gastrotomy or posterior mediastinotomy is called for (von Hacker). An exception may be made in the case of vulcanite plates without large metallic parts." On the other hand, Mosher says that opening the œsophagus from the side of the neck, for the removal of smooth foreign bodies, is now obsolete surgery. Chevalier Jackson holds that external surgery has no place in treatment, and is rarely if ever justifiable unless the foreign body has already escaped through the œsophageal wall. In all other cases, no matter how large the foreign body, if it has gone in by the natural passages it can be brought out by the same route. When swallowed it assumes the position which offers the least resistance, and it remains for the endoscopist to assist its return journey under conditions which will give least resistance. In this opinion I am entirely in agreement. Judging by recent improvements in instruments and technique, there appears to be no reason why any swallowed foreign body, which has not passed into the stomach, should not be retrieved *per vias naturales*. We may fairly hope that—with suitable instruments in the hands of the skilled endoscopist—the operation of œsophagotomy with its risks will soon become obsolete in all cases of irregular foreign bodies, no matter their size or shape.

With the object of further improving the technique and so overcoming the many difficulties met with in the removal of foreign bodies I have designed the following new instruments.

Non-slipping forceps for removing foreign bodies of any description from the œsophagus, trachea, or bronchi—e.g., tooth-plates, coins, buttons, nails, pins, fish or other bones, and fruit stones.—These forceps (Fig. 1) were originally designed by me to fit the dome-shaped portion of a tooth-plate which had been accidentally swallowed, and had remained undiscovered and impacted in the œsophagus for two and a half years. The blades are shaped on the principle of a crab's claw, the upper blade being curved and having at its extremity a triangular tooth which fits between two similar

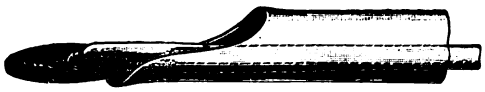
[1] StClair Thomson: Diseases of the Nose and Throat, second edition, London, 1916, p. 744.

FIG. 1.



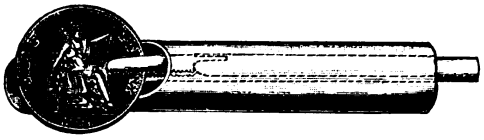
The non-slipping forceps with enlarged view of the blades showing their grip on a tooth-plate.

FIG. 2.



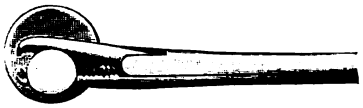
Extraction of coin, first position.

FIG. 3.



Extraction of coin, second position.

FIG. 4.



Collar stud grasped by its neck.

FIG. 5.



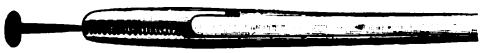
Collar stud grasped at the edge of its base by the teeth of the forceps.

FIG. 6.



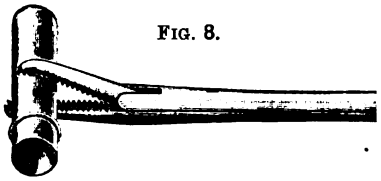
Trouser button.

FIG. 7.



Shows a carpet tack grasped securely between the teeth at the extremity of the blades, while it is also held firmly in the groove of the blades by the transverse serration. (This is one of the most difficult foreign bodies to grasp and remove on account of its receding stem and point.)

FIG. 8.



Shows how the blades will securely grasp the slippery and polished circumference of a pencil cover.

FIG. 9.



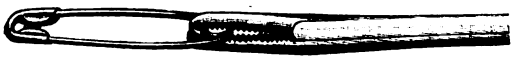
The same, with upper blade outside and lower blade inside.

FIG. 10.



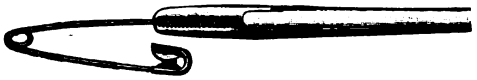
The same, with both blades inside, acting as a wedge and controlled by the spring in handle of forceps. (In such a case the forceps are inserted closed.)

FIG. 11.



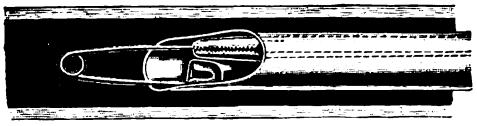
Shows closed safety-pin seized by its extremity.

FIG. 12.



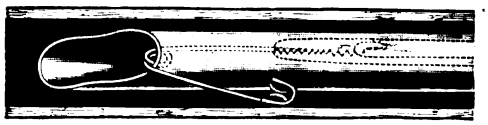
Shows open safety-pin seized by its point which lies in the groove in the centre of the blades, and is so protected that it cannot cause damage to the œsophageal wall.

FIG. 13.



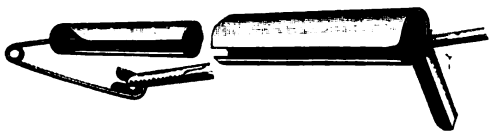
Method of extraction of an open safety-pin seized by its point and drawn into the extremity of the endoscopic tube.

FIG. 14.



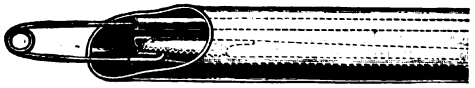
An open safety-pin seized by its point and drawn into the endoscopic tube while the other limb lies outside.

FIG. 15.



Shows Hill's method of closing and removing an open safety-pin.

FIG. 16.



Shows Paterson's method [2] of removing an open safety-pin.

[2] Proc. Roy. Soc. Med., vol. vi., Nov. 1st, 1912, p. 24.

ones in the lower blade. Both the blades are transversely serrated, giving greater security to their hold on a foreign body. They are, in addition, grooved down the centre, so as to prevent any lateral slipping. They

FIG. 17.



FIG. 18.



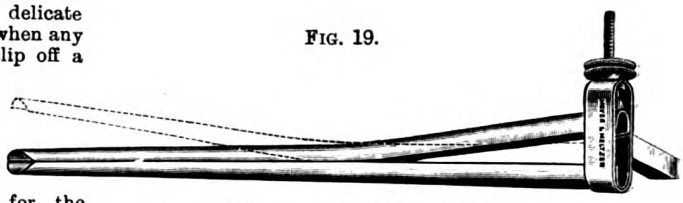
Fig. 17. Left half of vulcanite denture.
Fig. 18. Vulcanite denture impacted in the œsophagus. The illustration shows the margin of the tooth-plate, as seen by the œsophagoscope. The concavity of the plate allowed of bougies and endoscopic tubes being passed alongside it. (StClair Thomson.)

are suited for heavier work than the forceps hitherto in use. Experience has shown that the latter are too delicate in many cases as the forcep ends are apt to break when any strain is put upon them; they are also liable to slip off a foreign body such as a tooth-plate or carpet nail, not only during the process of grasping but also when the forceps are being withdrawn, owing to the foreign body or the forceps catching against the extremity of the examination tube. The disadvantage of having to change and adjust the various forcep ends, introduced by Brünings, for the several varieties of foreign bodies, is also done away with. Later work with these new forceps has demonstrated the remarkable way in which they adapt themselves to the irregular surface of any kind or shape of foreign body. Any article which can pass into the œsophagus or bronchi can be grasped so securely at any point by the blades that it cannot slip from their grip. Having once grasped the foreign body the forceps will support the entire weight of the œsophagoscopic tube and handle, for the forceps blades act as a wedge to the tube and grasp the foreign body still more firmly during the process of extraction, so that the forceps tube and handle can be withdrawn *en masse* without any fear of slipping off or any risk of breaking. Although so strongly made, they do not impede the view, the diameter of the shafts being only 2 mm. or 3 mm. in the bronchial instrument and 3 mm. or 4 mm. in the œsophageal instrument. Each instrument can be supplied, if necessary, with 3 or 4 shafts of different lengths, from 25 cm. to 50 cm., the most useful being 31·5 cm. for adults and 25 cm. for children.

The following illustrations show the way in which these forceps adapt themselves to some of the foreign bodies which may be swallowed or inspired. (Figs. 2–12.)

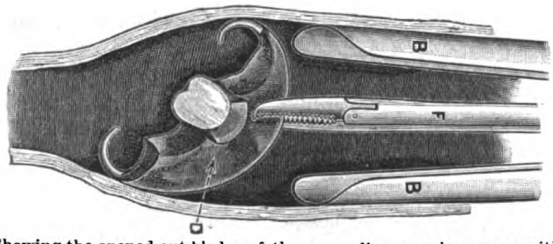
Closed safety-pins present few difficulties in their removal, and the same may be said of open ones with the point downwards, for the spring, i.e., the ring end of the pin, may be seized with forceps, and as it is drawn up into the endoscopic tube the pin closes itself against the opening of the tube. (Tubes with circular or oval extremities are the best under such circumstances.) (Fig. 25.) Open safety-pins when accidentally swallowed generally pass downwards hinge first with the catch and point uppermost. They therefore present greater difficulties, and if attempts are made to remove them in the ordinary way the point may transfix or tear into the œsophagus or bronchus, and so cause fatal injury. If the point of the pin has already become fixed or buried it may be loosened and set free by grasping the hinge portion with the forceps and pushing the pin down for a short distance until the point is seen to be released, when it may be again seized by the point with the forceps. While protected between the blades further manipulations may be carried out with less risk. (Fig. 12.) If the safety-pin is a small one it may be entirely drawn into or withdrawn through the tube by the forceps applied to the point. (Fig. 13.) This is, however, only possible when there is a certain proportion between the open pin and size of the tube used—e.g., a tube of 12 mm. diameter will admit a safety-pin of, say, 30 mm. length and open to the extent of 10 mm. It follows that larger tubes, and especially the oval ones of Mosher or the expanding tube of Hill (see Fig. 19), will admit larger-sized pins and those which are more widely apart.

FIG. 19.



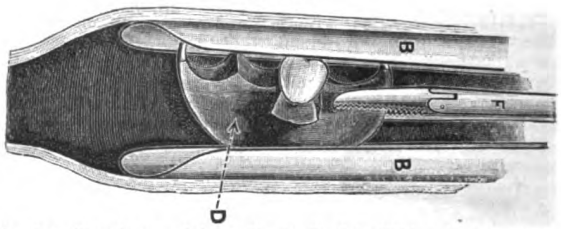
Hill's expanding œsophagoscope.

FIG. 20



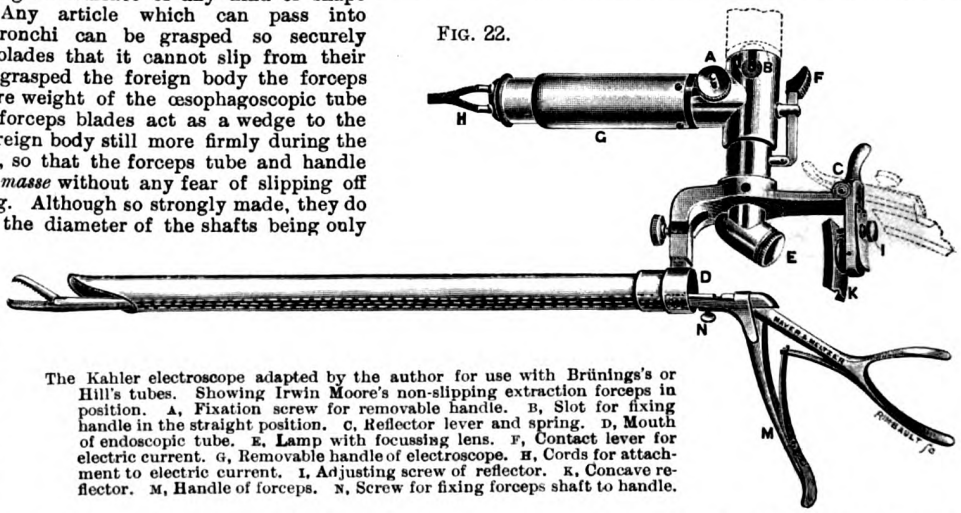
Showing the opened-out blades of the expanding œsophagoscope with impacted tooth-plate in the act of being loosened by the author' strong forceps. (William Hill.)

FIG. 21



Showing the sharp points of the tooth-plate hidden in the grooves protecting blades of the expanding œsophagoscope. The denture, forceps, and œsophagoscope are withdrawn *en masse*. (William Hill.)

FIG. 22.

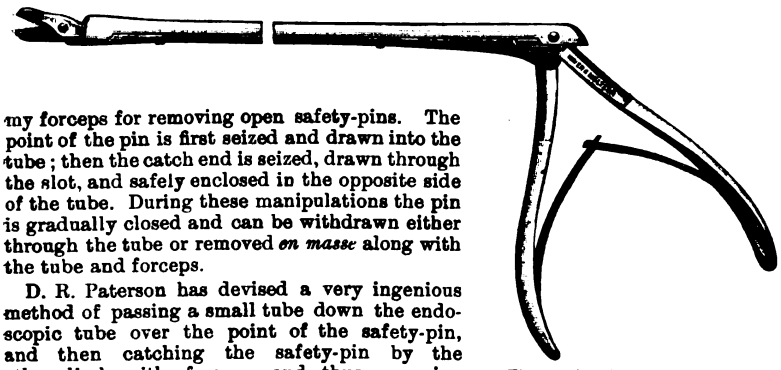


The Kahler electroscope adapted by the author for use with Brünings's or Hill's tubes. Showing Irwin Moore's non-slipping extraction forceps in position. A, Fixation screw for removable handle. B, Slot for fixing handle in the straight position. C, Reflector lever and spring. D, Mouth of endoscopic tube. E, Lamp with focussing lens. F, Contact lever for electric current. G, Removable handle of electroscope. H, Cords for attachment to electric current. I, Adjusting screw of reflector. K, Concave reflector. M, Handle of forceps. N, Screw for fixing forceps shaft to handle.

In the case of larger safety-pins the point may be seized by the forceps and drawn up into the tube; this leaves the other limb outside, but as the sharp portion of the catch looks downwards no injury is likely to occur when withdrawn along with the tube. (Fig. 14.)

William Hill recommends his slotted œsophageal tube and my forceps for removing open safety-pins. The point of the pin is first seized and drawn into the tube; then the catch end is seized, drawn through the slot, and safely enclosed in the opposite side of the tube. During these manipulations the pin is gradually closed and can be withdrawn either through the tube or removed *en masse* along with the tube and forceps.

FIG. 23.



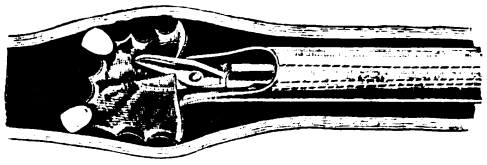
The cutting forceps or shears.

D. R. Paterson has devised a very ingenious method of passing a small tube down the endoscopic tube over the point of the safety-pin, and then catching the safety-pin by the other limb with forceps, and thus removing it safely, the little tube, forceps, pin, and endoscopic tube all being withdrawn together. (Fig. 16.)

To carry out any of these methods successfully there should be no question of the forceps slipping off the point of the pin, and for this purpose my non-slipping forceps can be thoroughly recommended. They have proved of great service in many cases during the past two or three years.

StClair Thomson [3] successfully removed a tooth-plate with these forceps, which had been impacted in the œsophagus at the level of the bifurcation of the trachea for two and a half years. (Figs. 17 and 18.) He states that on account of its size it was impossible to remove the denture through the tube, so that tooth-plate, tube, and Brünings's handle were all removed *en bloc* by the forceps, which carried the entire weight.

FIG. 24.



The illustration shows the shears cutting through a tooth-plate in the œsophagus.

William Milligan [4] has reported a case in which he had great difficulty in removing an impacted fish-bone deeply situated in the gullet. After many unsuccessful attempts he was finally enabled to extract the bone with these forceps after he had failed to do so with all the others. He considers that the forceps of Brünings are really a toy when it comes to anything serious.

William Hill, in December, 1913, removed a denture which had been impacted for eight days in the gullet of a man aged 30. Its upper half was in the cricoidal pharynx, while its lower half was in the cervical œsophagus. He states that it was incredible how firmly impacted and buried it was, and though he tried many forceps in his attempts to extract it he found that none of them were strong enough even to move it. Finally, the denture was easily grasped and successfully removed by my new forceps. (Figs. 20 and 21.) He recommends [5] that these forceps should be used in conjunction with his expanding œsophageal tube in the removal of dental plates from the œsophagus. (Fig. 19.)

D. R. Paterson [6] reports the case of a man, aged 35, who had swallowed a large, irregular piece of bone (portion of a vertebra) in some soup. The mass was firmly impacted opposite the level of the sternal notch, and owing to its size and shape ordinary forceps failed to grasp it properly or move it. It was finally removed without much difficulty by my non-slipping forceps. The bone measured 23 mm. (1 inch) transversely and 17 mm. (⅔ inch) antero-posteriorly.

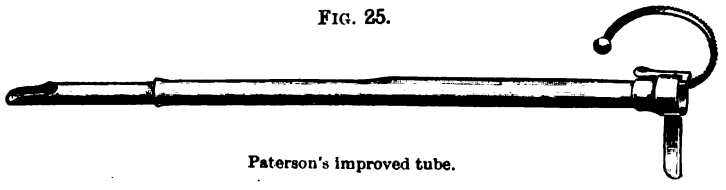
In his latest work on œsophagoscopy and bronchoscopy Chevalier Jackson [7] expresses the opinion that there will never be a "universal" forceps, and that a large selection will always be necessary for endoscopic work. So far as instruments for the removal of foreign bodies are concerned, I venture to believe that these new non-slipping forceps will prove to be the much-wanted "universal" forceps. Messrs. Mayer and Meltzer, Great Portland-street, are the makers.

To assist in overcoming the many difficulties met with in the removal of large foreign bodies I have had the Kahler electroscope adapted to Brünings's and Hill's tubes. It is more advantageous than Brünings's electroscope in exploring for and extracting foreign bodies, because it gives a wider field and permits the use and easier manipulation of larger and stronger instruments. By pressure on the spring C the concave reflector K may be turned back for the introduction of lengthening tubes or instruments, which can be performed under the direct control of the eye without the least trouble. The handle may be used in the straight as well as the angular position—a great advantage in examining patients both in the sitting and lying positions. (Fig. 22.)

Endoscopic cutting forceps or shears.—I have also designed a pair of very strong shears for cutting through tooth-plates, pins, or bones which have been accidentally swallowed and impacted. (Fig. 23.) They combine both the grasping action of forceps and the cutting action of shears. For cutting purposes they are unequalled by anything at present in use, as they will easily cut through plates of vulcanite, gold, aluminium, or platinum, and the gold hooks attached to tooth-plates; it is also possible to cut through swallowed and impacted pins, and so permit of their removal in pieces. They are therefore a great improvement on the forceps which crush and break up but do not cut a tooth-plate.

When a tooth-plate is swallowed it generally turns to the position or diameter which offers the least resistance to its passage, and if it reaches the stomach it will generally pass safely out of the body. But it may be turned into a broader diameter by the contraction of the œsophagus or meet with one of the narrower portions of the gullet, where it may be checked and become impacted—namely, the post-cricoidal pharynx (above the mouth of the œsophagus), the constriction due to the projection of the left bronchus, or the phrenic narrowing. In such cases it is the work of the œsophagoscopist to coax it back again to its narrower diameter, either by a gradual rotation—e.g., by seizing the corner of the denture by the forceps and so loosening its impaction (as shown in Figs. 20 and 21), or, if this procedure fails, it is possible to cut through the denture and remove it in two or more pieces.

FIG. 25.



Paterson's improved tube.

Killian [8] has reported the case of a large vulcanite plate which he was able to reduce in size and remove in three pieces by cutting through it with a specially made cautery knife. This appears to be a most dangerous method and cannot be recommended.

These forceps shears are so constructed that a tooth-plate is grasped and drawn up between the cutting blades, towards the operator and away from its impacted position, while the

[3] THE LANCET, Jan. 4th, 1913, p. 16.
[4] Proc. Roy. Soc. Med., vol. viii., Dec. 4th, 1914, p. 40.
[5] Article on Foreign Bodies in the Œsophagus, Encyclopædia of Medicine and Surgery, London, 1912.
[6] Proc. Roy. Soc. Med., vol. ix., Dec. 3rd, 1915.
[7] Peroral Endoscopy and Laryngeal Surgery, 1915.
[8] Deut. Med. Woch., Dec. 20th, 1900.

cutting action is taking place. This is an advantage possessed by no other instrument. Any damage to the œsophagus and adjoining parts by the foreign body being pushed further away is therefore avoided or lessened. When the denture is grasped it should be drawn up by the shears against the open extremity of the œsophagoscopic tube, where it may be steadied during the cutting process, while at the same time counter pressure may be exerted by the tube against the denture. A similar procedure is advised when cutting through an impacted pin or fish-bone. A slight turn of the wrist to the left hand side during the cutting will greatly facilitate the satisfactory working of the instrument. A long hook probe may be used in addition, if necessary, to assist in fixing the foreign body against the extremity of the tube during the cutting. Large tubes with circular extremities or the oval tubes of Mosher are better adapted for this purpose in most cases than the beaked tubes.

Paterson's improved tube is especially useful, for in this the inner tube is beaked to facilitate introduction and act as a pilot, and when this is withdrawn it leaves the cylindrical end of the outer tube which is easier to manipulate. (Fig. 25.)

E. A. Peters, in April, 1912, with these shears successfully removed the half of an upper tooth-plate which had been accidentally swallowed and impacted in the œsophagus of a

FIG. 26.



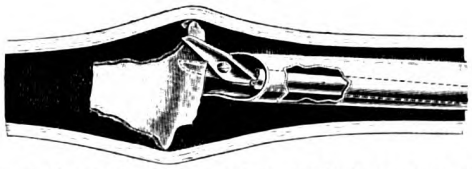
FIG. 27.



Portion of tooth-plate removed by Peters, showing its upper surface in Fig. 26 and its lower surface in Fig. 27; the denture measured 29 mm. by 22 mm. The two central and lateral incisors had been broken off before the denture was swallowed.

woman at the level of the bifurcation of the trachea for eight days. The patient had the two natural canines, and probably two bicuspid and two molars on the remainder of the plate. At the left upper corner of Fig. 26 the cut made by the shears is seen. The denture, which was securely grasped by the shears, shows that it had been half cut as it was drawn up between the shear blades, whilst it was at the same time released from its impacted position before the cutting process had been completed, thus enabling the operator to remove the plate without the necessity of completing the cut. It is important to note that the denture was impacted in its broadest diameter, and had the cut been completed it would have reduced the diameter by a quarter of an inch. No damage was done to the œsophagus, and the patient made a speedy recovery.

FIG. 28.



The illustration shows the denture impacted in its broadest diameter and the shears in the act of cutting off the angle.

The instrument measures 31·5 cm. in length and 5·7 mm. on cross-section of the shaft. As the cutting ends are at such a long distance from the hinge it must be very strongly made of the finest and best tempered Sheffield steel. In this respect Messrs. Mayer and Meltzer have carried out my suggestions with their usual skill and care, so that the instrument they have made is practically unbreakable. At first sight it might appear that the element of strength had been too much insisted upon, but I have found that the elliptical shape in which they are made causes least obstruction to the view and does not materially interfere with any operative procedure.

Wimpole-street, W.

ON THE PRESENCE OF LEAD IN THE URINE IN FOUR CASES OF TRENCH NEPHRITIS.

BY CHARLES POWELL WHITE, M.D. CANTAB., F.R.C.S. ENG.,
PATHOLOGIST, CHRISTIE HOSPITAL, MANCHESTER.

(*From the Helen Swindells Laboratory, University of Manchester.*)

ON reading the account of trench nephritis given by Captain W. Langdon Brown, R.A.M.C. (T.F.),[1] it seemed to me that the incidence of the disease pointed to the possibility of its being attributable to the large use of tinned foods in the diet. By the kindness of medical friends in Manchester I was enabled to procure some specimens of urine and I proceeded to examine them for metallic poisons.

There is no reliable rapid method of detecting metals in urine. For the purpose of this investigation I have relied on the direct chemical examination of the ash after evaporating the urine to dryness and igniting the residue. This method is tedious and troublesome but reliable. I have tried other methods as described below, but so far they have not led to any considerable shortening of the process. In every case, however, they yielded the same results as the direct method and thus serve as controls.

I have so far examined five specimens from trench nephritis (two of them from the same case at different times); two specimens from ordinary nephritis, each of them the mixed urines from two cases; and a normal urine to serve as a blank experiment. On referring to the table it will be seen that lead was present in all the specimens from trench nephritis and in one of the mixed urines of ordinary nephritis (this case is being investigated further). Iron was present in all the nephritic specimens and copper in most of them. Tin was also present in Specimen 1. This was the most recent case, and contained more lead than the others. Specimen 6 from the same case a month later contained less lead, and tin was not found.

From some work which I have been doing lately, which will be published shortly, I have come to the conclusion that copper is universally present in the tissues, and I have found it in normal urine to the extent of 0·2 milligramme per litre. It may therefore be left out of account in the present investigation. The iron, again, can be attributed to the blood which was present in all cases, and possibly to the medicinal administration of iron. The presence of lead and tin in urine must, however, be regarded as abnormal. Owing to the similarity between the sulphides of copper, lead, and bismuth, and to the possibility of some of the patients having had bismuth administered to them, I have tested for this metal in three of the specimens and I have also examined the urine (Specimen 9) from a patient who was under bismuth treatment.

The constant presence of lead in these cases and the presence of tin in one of them naturally suggests the possibility of the metals being derived from tinned foods. If a solution of sodium chloride be boiled for 10 minutes in a stamped tobacco tin (which has no joints) it does not extract any metals. If, however, a small piece of solder is placed in the tin containing the solution, boiling for 10 minutes causes some lead and tin both to go into solution. Again, if a salt solution is boiled in an ordinary fruit or meat tin, it extracts traces of lead and tin, and if the solution contains the slightest trace of acid the amount of metals dissolved is markedly increased.

The methods adopted in the analysis were as follows.

1. *The direct chemical method.*—The urine is evaporated to dryness and ignited, destruction of the organic matter during evaporation being facilitated by the addition of nitric acid or of hydrochloric acid and potassium chlorate. The ash is dissolved in hot dilute hydrochloric acid and the solution saturated with sulphuretted hydrogen. (The sulphides had in each case a brown colour.) The sulphides are collected on a filter and the filtrate is tested for iron, &c. The precipitate is dissolved in a small quantity of hydrochloric acid containing a few drops of nitric acid, and the solution boiled to expel chlorine. The excess of acid is

[1] THE LANCET, Feb. 19th, 1916, p. 391.

Table giving the Results of Examinations of Specimens of Urine.

Specimen.	Case.	Duration.	Reaction.	Sp. gr.	Alb. grms. per litre.	Amount used c.c.	Hg	Pb	Bi	Cu	As	Sb	Sn	Fe	Zn	Method.
1	Trench nephritis.	5 weeks.	Alk.	1020	7·94	(a) 750	0	+	—	+	0	0	+	+	?	Direct.
						(b) 600	0	+	—	—	—	—	+	—	—	Pb by electrolysis, after destroying organic matter. Sn in residue.
6	Trench nephritis (same case as No. 1).	9 weeks.	Acid.	1012	1·62	(a) 1000	0	+	—	0	—	—	0	+	0	Direct.
						(b) 400	0	+	—	0	—	—	0	+	—	Al method.
						(c) 500	0	+	—	0	—	—	0	—	—	Mg method.
4	Trench nephritis.		Alk.	1025	2·80	(a) 750	0	+	0	+	—	—	0	+	—	Direct.
						(b) 400	0	+	—	+	—	—	0	+	—	Al method.
						(c) 500	0	+	—	+	—	—	0	+	—	Mg method.
5	,, ,,	11 weeks.	Alk.	1012	0·49	(a) 750	0	+	0	+	—	—	0	+	—	Direct.
						(b) 500	0	+	0	+	—	—	0	—	—	Al method.
						(c) 500	0	+	—	—	—	—	0	+	—	Mg method.
7	,, ,,	23 weeks.	Acid.	1017	9·57	(a) 500	0	+	0	+	—	—	0	+	—	Direct.
						(b) 300	0	+	0	+	—	—	0	—	—	Al method.
3	Acute nephritis (mixed specimen, 2 cases, children).		Alk.	1025	1·60	750	0	0	0	0	0	0	0	+	—	Direct.
8	Acute nephritis (mixed specimen, 2 cases).		Acid.	1010	0·84	(a) 1000	0	+	0	+	—	—	0	+	—	Direct.
						(b) 1000	0	+	0	+	—	—	0	+	—	Direct.
2	Normal.					(a) 500	0	0	0	0	0	0	0	0	—	Direct.
						(b) 1000	0	0	0	*	0	0	0	0	—	Direct.
9	Dyspepsia. (Patient taking bismuth.)					400	0	?	+	+	—	—	0	0	—	Direct.

\+ Present. 0 Absent. — Not examined for. * Trace.

almost neutralised by ammonia and the sulphides are again precipitated with sulphuretted hydrogen. The precipitate is allowed to settle and is washed by decantation (or it might be centrifugalised). It is then heated with caustic soda solution and the mixture filtered, the filtrate being tested for tin. The precipitate proved always to be soluble in hot dilute nitric acid, and from this the absence of mercury was inferred. The second precipitation with sulphuretted hydrogen may also be carried out in the presence of alkali instead of acid, in which case tin will not be precipitated, and if present will be found in the filtrate from the other sulphides.

The precipitate might thus contain bismuth, lead, or copper, and it is not always easy to identify these in the small quantities present. The method adopted was as follows. The solution of the sulphides is evaporated to dryness in a small evaporating dish, care being taken not to overheat the residue. One drop of a solution of potassium iodide is then placed on the dry residue. If bismuth is present there is formed the black bismuth iodide together with a red complex potassium-bismuth compound. Lead is indicated by the formation of the bright yellow iodide. If copper is present, or if there is a trace of free acid adherent to the residue, free iodine will be liberated and will also give rise to a yellow colour. This can be distinguished from the lead iodide by treatment with chloroform, which dissolves the free iodine but leaves untouched the lead iodide. Copper is recognised by the blue colour formed by the treatment of the residue with one drop of ammonia solution.

The identification of bismuth in the residue thus depends on the formation of a black iodide and the detection of copper on the blue ammonio-cupric compound. The identification of lead in the absence of bismuth depends on the formation of the yellow iodide. The identification of lead in the presence of bismuth is more difficult, and I have not yet completely satisfied myself as to the absence of lead in Specimen 9. The iodide test was not applied in Specimens 1 and 6. In Specimen 1 a precipitate was obtained with sulphuric acid, and in No. 6 the identification depends on the absence of copper, the absence of bismuth being assumed. The absence of arsenic and antimony in Specimens 1 and 3 was proved by the hydrogen test. This test was not applied in the other specimens. The identification of tin in No. 1 depends on the formation of a sulphide soluble in caustic soda solution and re-precipitated as a yellow precipitate on acidifying. This precipitate was dissolved in strong hydrochloric acid and after dilution reduced by zinc and platinum. The solution gave a faint precipitate with mercuric chloride. The absence of tin (and of arsenic and antimony) was shown in the other cases by the absence of a sulphide soluble in alkali.

In one case I tried, using 500 c.c., whether the coagulation of the albumin could be used for the separation of the metals from the bulk of the urine. The result was unsuccessful, lead being found both in the coagulum and in the filtrate. The albumin was estimated by weighing the dried coagulated albumin from 100 c.c.

2. *Electrolysis.*—Owing to delay in procuring necessary apparatus it has not been possible to apply electrolytic methods satisfactorily as yet. It was applied in Specimen 1 after destruction of the organic matter with hydrochloric acid and potassium chlorate, a rotating platinum crucible being used as kathode. A distinct deposit of lead was obtained, and tin was found in the remaining fluid. Electrolysis was also applied to the solution of the sulphides in Specimen 7. A deposit of copper was obtained at a potential of 1 volt. Afterwards the potential was raised to 1·6 volts and a deposit of lead was obtained. This method is being further investigated, as it is of considerable value in separating different metals.

3. *Aluminium method.*—If an acid solution containing tin, lead, and copper be shaken up with aluminium powder in a shaking machine, the metals are separated quantitatively in the metallic form, and can be filtered off with the aluminium, the filtrate being free from them. The same is true if traces of lead and tin be added to normal urine, the aluminium bringing down the whole of the added metals. Treatment of the nephritic urines with aluminium for several hours was, however, not so satisfactory. In each case the greater part of the lead and copper was recovered, but there still remained some in the filtrate. Organic substances were also precipitated and the filtration was tedious. In each case where this method was tried the precipitate was examined chemically as above and, except in Specimen 7, the filtrate was also examined. The results thus serve as controls to the direct method.

4. *Magnesium method.*—This consists of treating the urine with magnesium powder, the whole being vigorously stirred with a mechanical stirrer. The magnesium was added until the cessation of effervescence. This method is successful in artificial solutions, but in the albuminous urines there were the same difficulties as with the aluminium method, and filtration was even more difficult owing to the precipitation of proteins, &c. Of the two methods the aluminium method is the better.

So far I have not attempted any quantitative estimation of the lead present. Such an estimation would depend on a colorimetric method, utilising the sulphide; but before this can be considered satisfactory, effective means must be taken to ensure the absence of copper (and bismuth). I am hoping that the electrolytic method will be useful in this connexion.

It is obviously impossible to draw any conclusions from four cases only. The presence of lead in the urine may have no significance in the etiology of the disease *qua* "nephritis," but may be of significance *qua* "trench." It is possible that lead may be present in the urine of soldiers in the

trenches more frequently than in that of civilians at home. I have not yet examined any specimens from soldiers other than these nephritic cases, but am hoping to do so shortly.

I have published these results as a preliminary communication, to draw the attention of others, especially of those who see these cases in the early stages, to the subject, so that they may consider the possibility of some association between this disease and the excessive use of tinned foods, especially of such foods as are cooked in the tins themselves.

For the analysis of Specimen 6 I am indebted to Dr. D. T. Harris. I have also to express my thanks to Major R. B. Wild, R.A.M.C. (T.F.), for Specimen 1 (Ducie Avenue Military Hospital); to Captain F. E. Tylecote, R.A.M.C. (T.F.), for Specimens 5 and 6 (Withington Military Hospital); to Dr. E. M. Brockbank for Specimens 3, 4, 7, and 8 (Manchester Royal Infirmary); and to Dr. Harris for Specimen 9.

PS.—I have just seen the communication of Mr. R. L. Mackenzie Wallis [2] on the examination of the specimens of urine from the cases under the care of Captain Langdon Brown. He, using a different method, was unable to detect the presence of any heavy metals.

Manchester.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

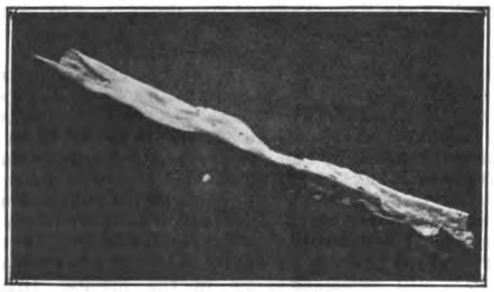
AN UNUSUAL CASE OF ŒSOPHAGEAL CAST.

BY F. H. JACOB, M.D. LOND., M.R.C.P. LOND.

THE unusual nature of the following case made me think it worth putting on record.

The patient, who had recently enlisted in the army, came to see me on account of a sore throat. The pharynx presented a grey, sloughy appearance. He brought with him some stuff which he had vomited on the previous day. On floating this in water I found it to consist of a cast of the whole of the œsophagus and of the pharynx and naso-pharynx. I cut sections and found it to consist of the epithelial lining of the œsophagus. Reproductions of photographs are shown of the cast itself and of a section through the thickness. The sections were taken from both ends of the cast and show identical structure of both extremities.

FIG. 1.



Reproduction of photograph of cast 11 inches long.

FIG. 2.



Micro-photograph of section through the thickness of the cast.

[2] Journal Royal Army Medical Corps, March, 1916.

The patient gave a history of having had two similar attacks previously—one a year ago and the other six years ago. He told me that he had not been able to swallow properly for six years, something always seemed to catch him in the throat. When eating meat he had to chew it thoroughly and never hurry. Each attack commenced during a meal, and felt as though something sharp was cutting his throat, then he vomited up blood, and after that the skin. The throat was very sore for a fortnight, then got right again. I saw him ten days later, and his throat was then nearly recovered. He had had no previous illness except eczema as a baby. The Wassermann reaction was completely negative.

Appended are notes of some previous cases.

1. In THE LANCET of Jan. 5th, 1901, p. 26, Dr. Nathan Raw recorded a case of membranous œsophagitis with expulsion of a complete cast of the œsophagus, of which a coloured illustration was given in the text. In this case the œsophagitis was ascribed to drinking neat brandy, whisky, and rum. Raw mentions in his paper that exfoliative or desquamative inflammation of the œsophagus, or "œsophagitis dissecans superficialis" was first described by Birch-Hirschfeld in Ziemssen, vol. viii., p. 140. This case of Raw's was submitted to gastrostomy and died.

2. At the Royal Society of Medicine, Section of Laryngology, meeting on April 4th, 1913, Mr. G. N. Biggs showed an almost complete cast of the epithelial lining of the œsophagus, which was vomited three days after the patient had swallowed one ounce of chloroform. Rectal feeding was employed, and bismuth, lanolin, and paroleine given every four hours by the mouth. Œsophagoscopy three months later gave no indication of contraction.

3. Osler and McCrae, second edition, 1915, p. 80. John McCrae describes various causes of phlegmonous œsophagitis; records a case reported by Neisser [1] and a case of Stern's, where a cast 13 centimetres long was expelled; alluding also to Birch-Hirschfeld's original case "in which a 20 centimetre cast was expelled three days after the onset of the first œsophageal symptoms; the patient promptly recovered."

4. There is a short allusion in the "Twentieth Century Practice of Medicine" by Fitz, of Boston, which adds little to the previous.

Nottingham.

A CASE OF PLEURO-PNEUMONIA TREATED WITH PHYLACOGEN.

BY FRANK COLLINS, L.R.C.P. LOND., M.R.C.S.,
DEPUTY CORONER FOR THE METROPOLITAN DISTRICT OF ESSEX, ETC

THE patient was a highly neurotic (partly alcoholic) woman of about 40, under observation by an eminent cerebral specialist, who had diagnosed recently a glioma of the optic tract. I was told by the patient's husband that the pain in the head had been "terrible." There was certainly impaired articulation, and before the attack I am about to refer to there were frequent subconscious flashes of light and flame in both eyes with the paroxysms of pain.

I was called one night because the patient was "choking for breath and in great pain in her side." On examination I found what I diagnosed provisionally as a metastatic development at the base of the right lung, which had caused the localised acute pleuro-pneumonia in that region. By the second day of my seeing the case, apparently the third or fourth of the onset, there was evidently a pleuro-pneumonic explosion in the whole of the right lower lobe, and this had extended to the left lower lobe. The temperature was only 101° F., but the impaired oxygenating capacity of the lungs was obvious from the strained efforts at inspiration and the patient's constant, distressing appeal: "Oh, if I could only fill my lungs and take a good deep breath!" The pulse was hard, regular, 128–130. The face and lips were cyanosed.

It was not a fair test for the phylacogen, but I used it tentatively in the hope that it might do good, and at any rate it was not likely to make the prospect worse, under the circumstances. I began with an injection of 10 minims, continuing with the usual treatment, which I need not detail beyond mentioning that oxygen was given at intervals of three to four hours for about 10 minutes

[1] Berlin. klin. Wochenschrift, Jan. 3rd, 1910.

regularly. Thermofuge was applied from the start on a back "breast-plate," and hypodermic injections nightly of heroin 1/6th grain and atropin 1/100th grain were given throughout, sometimes twice or thrice daily. By the third day of my attendance both lungs were dull and non-aerated from the bases to the middle of the scapulæ, and friction sounds were distinctly audible at the upper limit and just below it. The consolidation was extending, in spite of the phylacogen, which I daily increased by 5 minims. Each injection was followed within an hour or two by giddiness, violent retching, and what the patient described as "pins and needles all over her." These apparently disadvantageous symptoms seemed hopeful as showing there was an energetic reaction somehow to the phylacogen, so I persevered. After the fourth injection the dullness and friction remained stationary. The temperature fell to 98° and the cyanosis became less marked, though the apnœa continued and was only relieved by more frequent oxygen inhalations. Collapse was dangerous, but I went on. By the sixth injection, the last two of 30 minims each, there began evident clearance of the lungs at the upper limit of dullness. Friction remained for three or four days, but from then onwards the consolidation rapidly disappeared. I gave no more phylacogen. By the tenth day the air-stream again reached the bases of both sides; the pulse fell to 90 and respiration became normal. The attack was over, and only general weakness and the usual "pneumonia wreckage" of dilated heart, anæmia, and exhaustion remained. Curiously enough, all the cerebral symptoms, with the exception of the sibilant speech, completely vanished.

I gave the patient up as doomed on the fourth visit, both because of the advancing symptoms and the difficulties she raised in the way of treatment. She refused nurses, she insisted on getting out of bed and even staggering about the room, and she would not take fluid food. From my first visit she said she knew she was going to die, and I think she believed it, but though I thought the same myself I tried to keep her hopeful in spite of the supervention on the fifth day of a distinct cloud of albumin, scanty excretion of urine, and œdema of the feet and ankles. The lungs became quite clear, and were so for a fortnight after the commencement of convalescence; the blood-stained sputum, of which there was at no time any considerable quantity, became absent

PS.—Since the above was written the patient has died; all the pneumonic symptoms entirely cleared up, and she had begun a hopeful convalescence. Death occurred from acute meningitis and exhaustion.

Wanstead, Essex

AT the last meeting of the Bideford (Devon) board of guardians the resignation was accepted, with much regret, of Dr. Charles Sinclair Thompson, who has been medical officer and public vaccinator of the district for the past 40 years.

A MARY MURDOCH MEMORIAL FUND.—The Hon. Mrs. Franklin writes: "Dr. Mary Murdoch's friends have expressed a wish to contribute towards a memorial which would perpetuate her memory among medical women even after the generation of those who have known and loved her has passed away. Her high professional standard, the inspiration and encouragement she was to her colleagues and friends, her work for women, and her belief in them and the part they can take in the nation's welfare, are well known. At this moment, when the demand for medical women is far greater than the supply, it is felt appropriate to her memory as well as to the nation's needs, that a memorial should be chosen which would help some young medical women in the first years of their practice. While actual details have yet to be settled, it is intended that a fund shall be raised to found a bursary or bursaries on these lines, in connexion with the London (Royal Free Hospital) School of Medicine for Women. It is in the belief that there are many who would wish to help in such a memorial that it has been decided to make its existence widely known." The following are acting as the committee of the Memorial Fund: Miss L. B. Aldrich Blake, M.D., M.S., Dean of the London School of Medicine for Women; Mrs. Edwin Gray, National Union of Women Workers; Mrs. H. Fawcett, LL.D., National Union of Women's Suffrage Societies; Miss Jane H. Walker, M.D.; Miss Helen Webb, M.B.; Miss L. Martindale, M.D., B.S.; Miss F. M. Edmonds, M.D., B.S.; Miss F. Stacey, M.B., B.S.; Miss S. Watt; and the Hon. Mrs. Franklin, honorary treasurer of the fund, 50, Porchester-terrace, London, W. (to whom contributions may be sent).

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF PATHOLOGY.

Bacteriology of Cerebro-spinal Fever.—Transplantable Tumour of the Guinea-pig.—Toxic Hepatitis.—Treatment of Wound Infections.—The Mechanical Causation of Appendicitis.

A MEETING of this section was held on May 2nd, Professor F. W. ANDREWES, the President, being in the chair.

The PRESIDENT gave a short account of the Bacteriological Results in 11 Consecutive Cases of Cerebro-spinal Fever admitted to St. Bartholomew's Hospital during the first four months of 1916. Only one was a military case; of the civil cases four were under 4 years of age and six were older children or adults. The type of coccus was determined in each case by agglutination with sera supplied from Millbank by Lieutenant-Colonel M. H. Gordon. The two earliest cases proved to be Gordon's Type I., the remainder Type II., except one case in an infant which could not be referred to any known epidemic type. The pharynx was always examined and the meningococcus was found in every case, twice in great abundance, sometimes only in small numbers. In each case the pharyngeal and spinal strains were compared by agglutination and were invariably referable to identical types, indicating that the pharyngeal infection was an integral part of the disease. Most of the cases remained carriers for several weeks, one for more than 70 days. Treatment was by repeated lumbar puncture, with the new Lister Institute serum, prepared with numerous diverse strains isolated during last year's epidemic. The serum had been successful, for though 4 cases out of 11 died (mortality 36·36 per cent.), 2 of these were infants under a year old and one a child of 3 years. Only one adult died, of streptococcal septicæmia following mastoid suppuration, after the meningococcal infection had been overcome. In cases over 4 years old the mortality was only 14·3 per cent. The improvement following the serum was in most cases immediate; in 3 severe cases in which it was given on the second or third day the patients were convalescent in 48 hours. One baby aged five months recovered. Blood culture was carried out in 3 early cases. Twice it was negative and once positive, the meningococcus being recovered from every tube. This case recovered promptly after serum had been given (intravenously as well as intrathecally). In a fatal case the coccus was also recovered from the heart's blood after death.

Dr. J. A. MURRAY read a short paper on a Transplantable Tumour of the Guinea-pig. The tumour grew in the inguinal region, was fatty, fibrous, and slightly cellular, and was regarded as a fibro-lipoma. It was grafted into a large number of guinea-pigs through several generations. After a long latent period it grew very slowly. This long period of latency was an extraordinary feature, for sometimes, even after two months, fresh tumours formed. Another striking feature was the size it attained, some of the tumours weighing little less than the animal. The cells of the tumour showed marked metachondritic changes. Having regard to its transplantability and the finding of tumour cells in a pulmonary arteriole in one instance, the term liposarcoma seemed to fit it most closely.

Dr. B. H. SPILSBURY exhibited and described a series of livers affected by Toxic Hepatitis. The first was from a case of tetrachlorethane poisoning, and showed irregular fibrosis, cellular destruction, very marked regeneration in one part, and an almost complete absence of fat. Another was from a case of poisoning by dinitrobenzol. It showed irregular fibrosis, little degeneration of the cells, much bile-duct proliferation, and no fat, and was obviously an example of a very chronic form of toxic hepatitis. A third liver had been poisoned by trinitrotoluene. It was reduced in size, and showed irregular fibrosis and very advanced fatty degeneration. The liver from a case of acute yellow atrophy was shown as a contrast. Its particular features were the absence of fat in liver cells and the marked fatty degeneration of the endothelial cells.

Dr. W. PARRY MORGAN, in a paper on the Treatment of Wound Infections, dealt with Sir Almroth Wright's proposal, made on the ground of laboratory experiments, to substitute

for treatment by antiseptics treatment by saline solutions. He questioned the interpretation of these experiments, and maintained that the laboratory did not justify the changes proposed. In the first place, with regard to the use of hypertonic saline, he reviewed Sir Almroth Wright's experiments, and contended that they did not show any such drawing power as was ascribed to salt, and that the only sense in which salt could be said to draw water to itself was that recognised when such a process as osmosis took place; and, further, that salt could not draw lymph to itself even by osmosis. He then dealt with the ways by which the flow of lymph could be promoted, and suggested that hypertonic salt solution might in some cases do this by causing an osmotic diffusion of water out of the cells, the shrinkage of which would cause the opening up of lymph channels, just as the ground is fissured in dry weather. The lymph would then have free passage to the surface, and any lymph-bound condition be relieved. But this effect would not be permanent, and often would not be seen at all. Dr. Morgan then pointed out that hypotonic fluids, such as water and hydrogen peroxide, would act in the opposite way to hypertonic, causing swelling of the cells and possibly a diminished flow of lymph, and therefore suggested that antiseptics should be diluted with an isotonic fluid such as physiological saline and not as is usual with water. He next discussed the question of chemotaxis, and contended that the method of estimating it was fundamentally faulty; and that the experiments could not possibly justify the claim "the polynuclear white corpuscles are carried forward by a chemotactic movement in the direction of the free surface upon which the physiological solution has been imposed." On the other hand, he agreed that the experiments showed that antiseptics, bacterial suspensions, and above all hypertonic saline inhibited the emigration of leucocytes, but in this connexion pointed out that of more practical significance than the laboratory experiments were the observations made on the wound itself as to whether there was a good flow of laudable pus. If there was any after an application, such application could not materially affect the physiological processes. This test showed that antiseptics did not interfere to any extent with the flow of pus, but that hypertonic saline would give us a wound as free from pus and clean as meat. He inferred from this that hypertonic saline renders ineffective the only defence against the streptococcus and staphylococcus, whilst with the application of an antiseptic or of physiological saline, this defence comes again into action. Pus, as long as it was not "corrupted," was a good thing in a badly infected wound, but it should not be allowed to remain there long enough to become corrupted. Hence the necessity for washing away pus, and, if possible, destroying the organisms which corrupt it. In regard to washing out a wound by constant irrigation, the fluid should be delivered at blood temperature, as otherwise the activities of the leucocytes would be diminished. The attempt to destroy organisms was made in two ways: (*a*) By washing with antiseptics, and (*b*) by the application of antiseptic dressings. In washing out the wound, the portion of the wash which was not immediately drained away and the film of pus which still adhered to the surface should be considered. In both cases the antiseptic would be in great excess, and would have to be rapid in its action to be effective. From his experiments he concluded that here the neutral hypochlorous solutions were very efficient whilst carbolic acid was comparatively ineffective. In the case of the dressing the pus would tend to be in excess and the action of the antiseptic would be prolonged. Here his experiments showed that hypochlorous solutions would be practically useless, whilst carbolic acid would in its action on the organisms be fairly efficient. The experiments by which he showed this were as follows: pus showing one or two organisms per field of a film was mixed with an antiseptic and incubated. If the organisms became more numerous it was clear that they grew in spite of the antiseptic. In these experiments he showed that four parts of pus and one of antiseptic grew organisms when the following antiseptics were used: carbolic acid, 1/60; mercuric salts, 1/200; iodine, 1/200; chloramine, 1/20; hypochlorous solutions, 1/200 available chlorine. It was inferred from this that it was unreasonable to expect enough antiseptic to diffuse into the tissues to inhibit the growth of organisms, still less to kill them. In similar experiments where organisms were added to sterile pus or to blood the antiseptics were found to be much more efficient, so Dr. Morgan inferred that they would be specially useful when applied to recent wounds and to prevent contamination from without. He considered, in conclusion, that antiseptics, as such, could not sterilise the tissues and would not be likely to do more than reduce the number of organisms on the surface of a wound. This they could do, and since it could hardly be possible that the depth and intensity of the tissue infection would be independent of the virulence and proportion of the surface organisms it would be an important gain, and was the rôle of the antiseptic in antiseptic treatment.

Professor S. G. SHATTOCK communicated a paper dealing with the Mechanical Causation of Appendicitis, based upon the examination of a series of appendicular concretions, and of the contents of 125 appendices in persons dying from various causes, 100 being over 40, and 25 between the ages of 15 and 25 years. Any such mechanical cause, if it is adequately to account for the alleged increase in appendicitis, would have to be (1) of recent introduction; and (2) of a kind that would extend to all classes of the community. One such that had been suggested was the ingestion of particles of the silica glaze detached from the enamelled hardware now in such general use. These particles were, of course, absolutely insoluble in the alimentary canal. Professor Shattock had not found a single flake of enamel in any of the many concretions he had examined, nor in the contents of any of the 125 appendices studied. In regard to the possible injury producible by the ingestion of silica in miners, Dr. W. Watkins-Pitchford, the present director of the South African Institute for Medical Research, Johannesburg, had kindly obtained for him the following information: "Dr. F. Aitken, the superintendent of the Miners' Phthisis Sanatorium, near Johannesburg, states that 537 cases of miners' phthisis have passed through this institution without his having seen a single case of appendicitis amongst them, nor has he noted any history of attacks before their admission. Dr. H. A. Loesser, the senior medical officer of the Crown Mines, has neither noticed nor heard it suggested that appendicitis is more common amongst miners than amongst others. The Director of the Native Affairs Department states that in July, 1915, there were 210,247 natives employed on the works and mines of the Rand; appendicitis is so rare that deaths from this cause are not classed separately; he holds that mine natives are not at all liable to the disease." The use of "French chalk" in dentifrices was another possibility, this material—magnesium silicate—being quite insoluble in the alimentary canal. The material was easily recognisable microscopically, but Professor Shattock had never found any in the appendicular contents or as forming the centre of a concretion. The use of Cerebos salt, which contains a notable amount of magnesium phosphate, could be ignored, since the latter was readily dissolved at 37° C. in a solution of HCl of the percentage in which the acid is present in human gastric secretion.

The hypothesis of most promise was that put forward by Mr. W. H. Battle—viz., that a new factor in the causation of appendicitis had been furnished by the particles detached from the steel rollers now almost universally used in grinding wheat for flour. After a lengthy investigation, Professor Shattock had somewhat reluctantly come to the conclusion that no proof of the theory was forthcoming. He had traced the fate of steel filings in flour, to which they had purposely been added, in bread made from such flour, and *in vitro* under the action of hydrochloric acid. Steel filings might be kept in flour indefinitely without undergoing oxidation. When flour containing such was made into bread (by means of yeast), the particles became slightly tarnished from an extremely superficial formation of ferric oxide (rust). When these particles were extracted from the loaf, and incubated at 37° C., in a solution of HCl of the gastric percentage, an abundant evolution of H took place. The fluid on being tested gave a *ferrous* (chloride) reaction only, without any *ferric*. (This was explained by the fact that any trace of *ferric* chloride produced from the minute amount of ferric oxide was reduced to ferrous in the presence of the free hydrogen. The point of this was that as *ferrous* chloride produced no constipating effects, no intestinal and appendicular stasis, favouring the formation of a concretion, could be attributed to the ingestion of steel particles—assuming this to take place. The amount

of solution which steel underwent in the acid within two hours, at 37° C., was small; the metallic particles would, therefore, pass with little change into the intestine, and here all further decomposition would be prevented by the action of the sodium carbonate of the pancreatic secretion, which rendered the intestinal contents alkaline. Steel filings might be kept for an indefinite period in a solution of sodium carbonate (of the percentage in which this is present in the pancreatic secretion) without undergoing any oxidation whatever. Mr. Battle had cited the pigmentation of the appendix which he had come across in certain cases furnished by operation, as suggestive of the prolonged ingestion of steel derived from flour. Professor Shattock had critically examined nearly all of these specimens, microscopically and microchemically, with the following result:—The colouration was due to the presence of somewhat translucent spherules of dull brownish colour contained in connective-tissue cells lying in the lymphatic tissue which surrounds the crypts; there was none in the muscular wall. When the sections were heated, *secundum artem*, in HCl and potassium ferro-cyanide or potassium ferri-cyanide no ferric or ferrous reaction was obtained in the spherules. When sections were freely treated with pure HCl no solution of the pigment took place. The pigment was clearly, therefore, iron free, and it followed from this that it could not possibly be iron or iron oxide that had reached the lumen of the appendix and been translated into its walls. The exact nature of the pigment was a more difficult question. In general characters it resembled iron-free blood pigment, and its presence was possibly due to the absorption of blood from the interior of the appendix. In cases of melæna Professor Shattock had on several occasions found blood in its lumen. Passing on to the study of a series of appendicular concretions, these were examined, after being incubated in dilute alcohol, by careful scraping whilst they were rotated beneath water, the whole procedure being conducted under a lens. The actual centre was examined microscopically *in toto* by removing it to a slide and washing it in Farrant's medium. In certain cases appendicular concretions formed upon a foreign body, such as a pin or fruit seed. The presence of a nucleus, however, was not only unnecessary, but in the great majority of cases there was none. The most careful examination *ad hoc* demonstrated that there was no differentiated centre whatever. The common appendicular concretion, as told microscopically, consisted solely of undigested plant débris. Cellulose was digested only in the large intestine, and by bacterial action alone. The débris referred to comprised free spirals, sclerenchymatous cells, the thick-walled, stiff, and sharply pointed hairs from the pericarp of the oat and wheat (abundant in oatmeal and flour), disintegrating wood and bast, &c. These consisted of lignine or cutine, and were incapable of digestion. Professor Shattock had found no cellulose in the concretions; this excluded the possibility that their formation resulted from a defective digestion of cellulose. The amount of calcareous deposition (calcium carbonate and calcium phosphate) occurring about the débris which formed the concretion was variable; in many examples it was of very limited extent, the concretions in the wet state being hardly firmer than clay. Such deposition was to be ascribed to bacterial action; the deposit, in fact, might not inappropriately be termed "appendicular tartar." He had not yet met with a proper appendicular calculus; the concretions consisted chiefly, or very largely, of vegetable débris, and the most accurate name for them was that of "stercolith." One factor that might conceivably lead to an increase in the formation of appendicular concretions, and so to an increase in appendicitis, was the recent rise of vegetarianism; a diet consisting almost solely of fruit and vegetable would furnish a greater abundance of indigestible residue. In some appendicular concretions there were conspicuous numbers of oat and wheat hairs; but Professor Shattock had not come across a concretion composed solely of such, and corresponding with the oat-hair concretions at times met with in the human colon. In the Museum of the Royal College of Surgeons of England there were several specimens of these curious formations, the first identified having occurred in a Lancashire carpenter, who was accustomed to take oatmeal daily in some or other form at every one of his meals. The augmentation of intestinal débris, it was true, did not, *per se*, make for the formation of a concretion; it was necessary to assume an appendicular stasis or some functional or organic irregularity of the appendix as a second factor; for under normal circumstances free ingress and egress took place from and to the colon. The different causes that led to stasis in the colon would bring about the same condition in the appendix; and, given a superabundance of indigestible residue, the latter would contribute a not unimportant factor to the origin of a concretion. In fact, there was no very abrupt line between concretions and scybala, and the actual centre of a laminar concretion was at times a small collection of minute scybala.

In regard to the results of the speaker's examination of the contents of 125 appendices from persons dying from other causes than appendicitis, the observations were made by pinning out the organ, slitting it up under water, and sweeping out the contents, which were then broken down with the brush, and carefully irrigated, any sedimentary residue being examined in Farrant's medium. For the present purpose it was enough to state that he had in no case discovered any particles of steel. He had selected for examination 100 appendices from individuals over 40 years of age, in order that ample time might have elapsed for the accumulation of metallic ingestion, and 25 from persons between 15 and 25 years, since this was the period of the highest incidence of appendicitis. Professor Shattock had encountered during these examinations two forms of neoplasm, for the presence of which the patients had not been admitted. In one case many small pedunculated adenomata projected from the mucosa, of the kind which at times grew in large numbers from the colon. In the other case the appendix was the seat of a typical columnar-celled carcinoma, which was in process of ulceration and had deeply invaded the muscular wall—an exact miniature of a carcinoma of the colon. The general conclusion at which Professor Shattock arrived, therefore, was that no evidence was forthcoming to show that appendicitis was due to damage inflicted on the mucosa by ingested physical irritants; and that the appendicular concretions often associated with acute inflammation were not attributable to an accumulation of inorganic material which might serve as a nucleus for the subsequent deposition of fæcal débris.

SECTION OF ANÆSTHETICS.

The Influence of Anæsthetics on the Temperature of the Body.—Exhibition of Apparatus.

THE annual general meeting of this section was held on April 14th, Dr. HAROLD LOW, the President, being in the chair.

A resolution was unanimously passed expressing the great loss the section had sustained by the death of Sir Frederic Hewitt, M.V.O.

Dr. M. S. PEMBREY and Dr. F. E. SHIPWAY communicated a paper entitled "Observations on the Influence of Anæsthetics on the Temperature of the Body." In this preliminary paper they did not refer in detail to the work of previous observers upon this subject. The influence of anæsthetics on the temperature might be exerted upon the loss of heat, the production of heat, or upon both of these processes. In man the practical methods of observation were the determination of the deep and surface temperatures, and as a measure of the production of heat the determination of the respiratory exchange. The former method they had used in man, and both methods had been employed by one of them in the case of animals. Deep anæsthesia abolished the regulation of both the loss and production of heat, so that the response of the warm-blooded animal to external heat and cold resembled that seen in cold-blooded animals; a fall of external temperature diminished, a rise increased the production of heat. It was this fact which complicated the problem. The internal temperature of a patient might show a fall, a rise, or no change according to the conditions involved during the period of anæsthesia. A fall in the rectal temperature from 100° to 97° F. was within physiological range when the whole extent of the daily variation in temperature was considered, but in the case of an anæsthetised patient subjected to an operation in a warm theatre (72°–74° F.) such a fall might occur within one hour. During short operations of slight severity the necessity for precautions against the loss of heat was not urgent, for in an adult there was, owing to the mass of the body, a reserve of heat which was not rapidly dissipated in a hot theatre. In such cases the advantages of warm

ether as compared with cold ether might not be so apparent. On the other hand, in the case of long operations or operation upon a patient possessing a low resistance the difference might be of great practical importance. The "open method" of giving ether used in these observations was that in which ether was dropped continuously on to some fabric spread over a Schimmelbusch mask, which was so closely applied to the face that the whole of the respiratory current passed through the fabric; when warm anæsthetic vapours were given the end of the tube from Dr. Shipway's apparatus was placed under the mask and warm ether vapour was pumped in at each inspiration. Either two layers of domette or 10–16 layers of gauze were used. With this method the temperature under the mask varied from 48·2° to 78·8° F. with cold ether, whereas with warm ether it was about 90° F. A patient breathed about 5 litres of air per minute, and the expired air was raised to 96° F. or thereabouts. It was obvious, therefore, that more heat must be lost from the respiratory tract, although the expired air with cold ether might not be warmed to the same extent. With such an "open method" they had never observed a lower temperature in the inspired air under the mask than 48·2° F., the temperature of the air of the theatre being 77° F., and some explanation was necessary for the exceedingly low temperatures recorded by some observers. It was necessary to remember that the air in the mask was being warmed constantly by the skin of the face and every few seconds by the expired air. For example, with a Schimmelbusch mask, two layers of domette, and a pad placed over the face the temperature of the air was 91·4° to 93·2° F. five minutes after the mask had been placed over the face, the temperature of the room being 71·6° to 73·4° F. The mask and pad were removed from the face and ether dropped upon the domette as during an administration, the temperature of the air fell to 32° F.; they were immediately placed over the face and within one minute the temperature of the air rose to 61·7° F. As regards the temperature of the body, observations of the rectal temperature were necessary, for the determinations in the mouth were unreliable. The surface temperature of the skin might rise under the influence of ether, owing to dilatation of the cutaneous vessels, and thus increase the loss of heat so much that the internal temperature fell. With warm ether the loss of heat from the skin could be more readily compensated. The excitability of the medulla was increased by a rise, diminished by a fall, in the internal temperature; this effect upon the respiratory centre was well known, and in a pronounced form was seen in heat polypnœa or dyspnœa. The heart was stimulated by warmth and the exchange of the gases between the blood and the tissues was facilitated by a rise, delayed by a fall, in temperature. A normal man reacted to external cold by diminishing his loss and increasing his production of heat; the anæsthetised man, paralysed for sensation and movement, had lost this control, and the level of the chemical changes which were a measure of vital activity could be maintained only by external warmth. This loss of control involved also the possibility of an abnormal rise in the temperature of the patient if he were exposed to excessive heat. A great practical advantage of warm vapours was that they enabled the surgeon to operate in a cooler theatre; high temperatures had a depressing effect on the staff. Apart from diminished efficiency and endurance, a warm and moist atmosphere introduced the danger of the sweat of the surgeon undoing the elaborate precautions taken to preserve aseptic conditions. The "open method" was not strictly an open one. The mask placed upon a pad over the face confined the air to a considerable extent; this was shown by the determinations of the moisture and the carbon dioxide in the air space. Thus the dry and wet bulb thermometers recorded 88·7° and 86° F. under the mask, and waved in the air of the room 72·5° and 65·3° F. The breath moistened the air, and thus obviated the necessity of adding moisture to the air laden with ether vapour. The amount of carbon dioxide might be 3 or 4 per cent. of the total 250 c.c. of air under the mask; there was, according to the closeness with which the mask was applied to the face and the thickness of the material, a certain amount of rebreathing, which might be an advantage when the stimulating effect of carbon dioxide was required.

Dr. SHIPWAY said he had used warm vapour anæsthesia for 18 months and had published a description of the method, its advantages, and of an apparatus in THE LANCET of Jan. 8th, 1916. One part of the evidence for the use of warm vapours had been given in the joint paper just read; the other part was due principally to some American anæsthetists who had shown by experiments on animals and by clinical observations that warm vapours were safer and diminished the loss of heat of the anæsthetised patient. He himself had found that the anæsthetic could be pushed with greater safety and with lessened liability for respiration to become dangerously weak; the reason was physiological, in that in the anæsthetised patient warmth increased respiratory activity and stimulated the heart. Induction was quicker and calmer and respiration was quieter since warm vapours were more easily absorbed and less irritating than cold. Shock was certainly less; his results had been better than with "open ether." An apparatus was then shown by means of which the warm vapours of ether, chloroform, or of mixtures of the two could be given in concentrations adequate for any operation. Other advantages had been already described.

Mr. C. CARTER BRAINE did not advocate "open ether"; he employed the "closed method," working either with the Clover or Ormsby inhaler. He thought the pioneers of ether administration in this country had endeavoured to employ warm ether vapour by the method of rebreathing, by warming the inhaler prior to use, or by warming the sponge of the Ormsby inhaler. He had returned to the use of the Clover of late in place of the Ormsby, and found it an excellent machine in conjunction with morphine and atropine. In order to render the administration of a slightly open ether type he had fixed a tap at the lowest part of the bag, by means of which air could be admitted and some of the contents of the bag expelled during expiration. A certain amount of rebreathing was beneficial, and the very satisfactory results obtained he attributed to the patient breathing a warm atmosphere with conservation of his CO_2.

Mr. G. ROWELL said that in two cases of warm ether anæsthesia symptoms of faintness gradually arose which appeared to be directly associated with the very warm vapour administered. He preferred many layers of gauze to two layers of domette, which offered much more obstruction to the breathing. He still employed the Clover on occasion; most of the advantages of the open method could be gained by using the Clover nearly all the time without the bag.

Mr. H. BELLAMY GARDNER was glad to hear that it was only necessary to warm the patient by means of a warm table and dry cloths, and perhaps preventing the fall of temperature in the vapours inhaled by artificial means, instead of by raising the temperature of the theatre and thereby exhausting the patient and those taking part in the operation.

Dr. G. A. H. BARTON was not convinced by the evidence offered of the value of the warmed-ether method.

The PRESIDENT said that the question of loss of heat during anæsthesia was a very vital one, especially since we were told that in the narcotic state man became a cold-blooded animal and lost for the time being much of his normal power of readjustment of his temperature. The warm-ether method was therefore to be preferred to that of the open-ether method, where the ether was allowed to evaporate on the mask and in its evaporation to abstract heat from the patient. The discussion had narrowed itself too much into a controversy between the Clover and the open-ether method. Successful anæsthesia depended more upon the administrator than upon the apparatus.

Dr. SHIPWAY, in replying, said that the pioneer anæsthetists warmed the inhaler in order to aid the administrator and not in order to help the patient. He had never seen faintness or pallor due to the use of warm vapours; they must be used with judgment, very high temperatures caused sweating, flushing, and oozing in the wound.

The PRESIDENT showed an apparatus for the intratracheal insufflation of ether, designed by Mr. K. H. McMillan, of St. Thomas's Hospital, and Dr. SHIPWAY showed an apparatus of new design.

Captain C. T. W. HIRSCH, R.A.M.C., showed a modification of Waller's chloroform inhaler (see p. 1003).

WEST OF ENGLAND CENTENARIANS.—**Mrs. Ann** Moore, of Torrington-place, Plymouth, died last week. She celebrated the 105th anniversary of her birthday on Jan. 20th. —Mrs. Mary Shittler, of Buckshaw Farm, near Sherborne, Dorset, recently celebrated the 102nd anniversary of her birthday.

Reviews and Notices of Books.

Tuberculosis: A General Account of the Disease, its Forms, Treatment, and Prevention.

By A. J. JEX-BLAKE, M.D.Oxon., F.R.C.P. Lond. London: G. Bell and Sons, Limited. 1915. Pp. 231. Price 2*s.* 6*d.*

THE author describes his book as an attempt to give a general and detailed account of tuberculosis in simple language. He has endeavoured to avoid as far as possible the use of technical and medical terms with the hope of making the work intelligible to those who have had no special education in medical or scientific matters. In these aims he has been conspicuously successful without the sacrifice of either clearness or accuracy. He has furnished an attractive and, at the same time, well-balanced account of the whole subject. The matter is treated in 15 chapters, each preceded by a table of contents and conveniently furnished with inset headings. The first is historical, briefly summarising the views of Hippocrates and Galen down to those of Virchow and Koch. Chapters on the tubercle bacillus and the tubercle follow, and then what we find to be a most illuminating chapter on Predisposition and Immunity of Tuberculosis. It is only unfortunate that a very disturbing misprint of "infection" for "hereditary" should occur on p. 40, line 18; otherwise the book is singularly free from errors of any kind. A series of chapters follow on clinical aspects of the disease, ending with three chapters on general, tuberculin, and sanatorium treatment. Here, again, we cannot imagine a fairer distribution of the claims for treatment, and the author appears to have no axe of his own to grind. The final chapter deals with prevention from the three points of view of destruction of the tubercle bacillus, avoidance of infection, and care for the general health of the community. The reader who makes this book his introduction to the study of tuberculosis will obtain a useful view of the subject in proper perspective.

Occupations from the Social, Hygienic, and Medical Points of View.

By Sir THOMAS OLIVER, M.A., M.D. Glasg., LL.D., Sc.D., F.R.C.P. Lond. Cambridge Public Health Series. At the University Press. 1916. Pp. 110. Price 6*s.* net.

THE need for further study of the conditions under which workmen are employed has been shown by recent Home Office inquiries into the question of fatigue as affecting the printing and chemical trades, coal-mining, and the health of the munition workers,[1] and these inquiries will probably be extended in the future—we shall have to deal with the industries of maimed soldiers, for instance, while the employment of women will have to be considered in its relationship to the health of future generations and the preservation of child life. For these reasons a guide to the study of occupations from the social, hygienic, and medical points of view, written in a style which can be easily understood and which will appeal to all those who are interested, whether practically or academically, in the health of the nation's workers, is very desirable at the present moment. Such a guide, not addressed to medical men alone, has been written by one who, in addition to being professor of the principles and practice of medicine at the University of Durham, has had a wide experience in the investigation of industrial disease, for Sir Thomas Oliver has been employed by the Home Office as an expert on special committees and inquiries into dangerous trades, on potteries and lucifer matches, and he was also a member of H.M. White Lead Commission.

In a book of this size a full exposition of a very large subject cannot, of course, be given, but the many-headed theme is dealt with in a thoroughly scientific, if brief, manner. The air of town and country, the relation of indoor and outdoor work, wages, efficiency and fatigue, the health and comfort of the workers, and generally the influence of harmful trades on man and his surroundings, are clearly discussed, and a bibliography at the end of each chapter indicates to the reader where he will be able to find fuller information. A question of very vital interest in the times that are before us is the choice of a career for boys and girls, and in one chapter we have the pros and cons of the various forms of employment for the two sexes in regard to health briefly weighed. A short introduction passes in review the origin and rise of commerce and manufacture and the interposition of the State in regard to the persons employed in manufacture and industry.

We welcome this book as a valuable introduction to the study of subjects which must grow in importance as trade and commerce increase, for the health of the worker and the increase of population are among the things upon which the stability of the Empire is based.

[1] THE LANCET, Oct. 2nd, 1915, p. 765, and April 8th, 1916, p. 785.

The Rat: Reference Tables and Data for the Albino Rat and the Norway Rat.

Compiled and edited by HENRY H. DONALDSON. Memoirs of the Wistar Institute of Anatomy and Biology, No. 6. Philadelphia. 1915. Pp. 278.

THE rat has many claims upon the attention of the medical man, since at several points its life-history is interwoven with the problems of human welfare and human disease. To the rat probably belongs the distinction of being the greatest mammalian scourge with which man has been called upon to deal; its presence is a constant economic problem, potent to waste merchandise and to disseminate disease. Science has had its revenge upon the rat, for not only has it evolved wholesale methods for its destruction, but it has made it one of the most useful laboratory animals. The rat may be regarded almost as a standard experimental animal in many methods of medical research. It is from this point of view that Professor Donaldson and his associates at the Wistar Institute have for many years made an exhaustive study of the rat. The work is divided into three parts: the first gives a short but excellent account of the zoological position and the historical migrations of the Norway rat; the second deals exhaustively with the domesticated white rat; and the third with its wild pigmented relatives. The statistical tables will be of the greatest value to the laboratory worker. Among the findings that are of the most general biological interest are the marked differences determined between the relative weights of the various viscera in domesticated white rats and their wild relations. The brain and spinal cord, the suprarenal, and the genital glands of the wild rat are relatively heavier than are those of the laboratory animal; the reverse is found in the case of the hypophysis cerebri, while the thyroid shows no variation. A striking section of the book deals with the activity of the animal, for, working with recording wheeled cages, Slonaker has determined that one rat ran a distance of 5447 miles in its active life-span of 33 months; it is also interesting to note that living in revolving cages, which permit of exercise, shortens the life of the animal. The full bibliography includes some 900 works dealing with aspects of the life-history of the rat.

New Inventions.

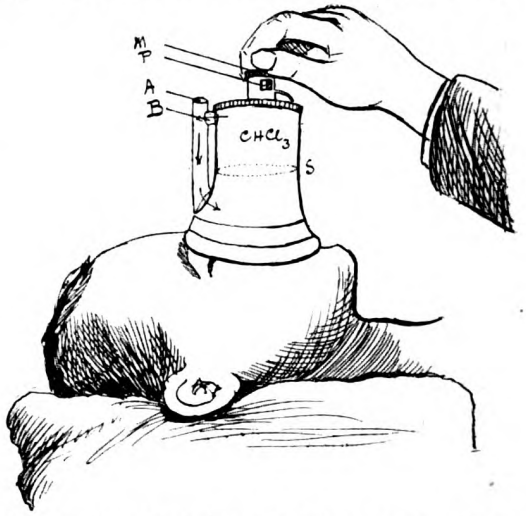
APPARATUS FOR CHLOROFORM ANÆSTHESIA IN MILITARY PRACTICE.

THE chloroform apparatus that I now recommend especially for military use is a modification of that shown by Professor Reynier in the Physiological Laboratory, University of London, at the meeting of the Section of Anæsthetics of the International Congress of Medicine, 1913. The apparatus is designed in conformity with the principles laid down by Snow and by Paul Bert, that for its safe administration chloroform vapour must be delivered at regular and easily controlled percentage. The French instrument is graduated on the system of Paul Bert and delivers nominally 0·4 to 1·2 grammes of liquid chloroform per 100 litres of air—corresponding with approximately 0·8 to 2·4 per cent. of chloroform vapour in air. The different strengths of mixture are obtained by varying the relation between two orifices, one large and invariable through which air is inspired, the other small and variable through which strong chloroform vapour is drawn into the main air stream. The variation of percentage is effected by varying the size of this second inlet by means of a revolving tap, which acts like the throttle of an ordinary petrol engine. The percentage is varied by opening and shutting the throttle; anæsthesia is, in fact, maintained of required degree, much as a petrol car is kept going at required speed by opening and shutting the

throttle. The apparatus acts like a carburetter, affording to respiration a more or less rich mixture of chloroform vapour plus air. The model shown by Professor Reynier has presented, in my experience and in that of Dr. J. Blomfield, certain advantages and disadvantages. The principal advantages are that the apparatus is portable and that both inspiration and expiration draw chloroform vapour from the chloroform chamber, so that there is no re-breathing. The principal disadvantage of the French model consists in the wholly illusory character of the graduation. Used precisely as described by Professor Reynier, the percentage of chloroform delivered has always been considerably below that indicated by the graduation of the instrument. And in correspondence with this fact it is insufficient to anæsthetise in cases requiring more than average strength of chloroform vapour, as happens habitually in military practice. I do not think it safe to attempt to increase the delivery of chloroform vapour by the application of hot cloths round the apparatus, as recommended by Professor Reynier; the percentage is then considerably above that indicated on the scale.

I found it necessary to modify the dimensions of the apparatus so as to obtain at ordinary room temperature (65°–70° F.) from 1 to 3 and 3·5 per cent. of vapour as measured by the densimeter, and I employed, as an evaporation fabric, lamp-wick, of which I had had satisfactory experience in an apparatus I devised some years ago and described under the name of the wick-vaporiser.[1] I spent a considerable amount of time upon the graduation of the modified apparatus at different temperatures and came finally to the conclusion that in consequence of what I may term its self-regulating character no great fluctuation of percentage occurs with fluctuation of temperature in the practical use of the apparatus. Self-regulation occurs in this wise. Where the apparatus is applied to the patient's face the temperature of the apparatus is raised by the expired air and cooled by chloroform evaporation. At 2 per cent. of chloroform vapour the warming by expired air and the cooling by chloroform evaporation balance each other, and the apparatus remains at constant temperature. If respiration becomes less vigorous, less warming by expiration and less cooling by evaporation takes place, and vice versa with more vigorous respiration greater warming by expired air is counterbalanced by greater evaporation of chloroform, so that under all conditions there is a tendency towards a prompt return to the average value of chloroform evaporation that balances warming by expiration. And by a fortunate accident the latent heat of vaporisation of chloroform and the specific heat of air are such that this point of equilibrium happens to be at the value of 2 per cent. At this percentage the self-regulation is complete; at higher and lower percentages it is no doubt less complete, but nevertheless practically efficient; with the index at, e.g., 3 per cent. the tendency is towards lowering of temperature and lowering of percentage; with index at, e.g., 1 per cent. the tendency is towards increased temperature by expired air and rise of percentage—i.e., in both cases towards the equilibrium point. I regard this self-regulating property of the apparatus as being of considerable advantage in the maintenance of uniform anæsthesia. I attach less importance to the observation of the nominal percentage during administration than to the state of the patient, according to which the throttle is opened or closed. It is, of course, valuable to realise the numerical value of such variations, but it should also be realised that any defective adaptation of the face-piece entails a reduction of the real below the indicated percentage. I have on previous occasions, and especially at a time when it was most necessary to insist upon the danger of overdose, given as the normal range 1 to 2 per cent.[2] I now think it to be necessary in exceptional cases, and as a rule in the class of cases with which we have to deal in military practice, to regard 3 per cent. as the upper limit.

The following is a description of the modified apparatus: The hand (of the patient in this figure) is upon the throttle valve, of which the port, P, is increased or diminished by turning the milled head M. A partition, S, separates the chloroform chamber $CHCl_3$ from the rest of the apparatus. The patient inspires air through the principal air tube A, plus more or less chloroform vapour through the lateral tube B, which leads the chloroform chamber to the air tube according as the throttle is opened or closed at the port P. The chloroform chamber is lined with lamp-wick and is charged by pouring in about one fluid ounce of chloroform, the lid of the apparatus being removed for this purpose. A charge lasts about half an hour. The apparatus may be



applied to the patient by an orderly or nurse. It can be held on the face and manipulated by the patient himself for the induction of light anæsthesia.

The apparatus has been in use at the Royal Herbert Hospital, Woolwich, during the past year in over 2000 cases.

Professor Reynier's original model of the apparatus and my modification of it offer in the hands of certain administrators a disadvantage that Captain C. T. W Hirsch, R.A.M.C., has endeavoured to overcome. The good adaptation of the indiarubber margin of the face-piece is sometimes difficult to secure in all positions of the head. Captain Hirsch has separated the two parts of the apparatus—i.e., the chloroform chamber and the actual mask.[3] The junction between these two parts is effected by a broad gauge tube at an angle of about 120° that can be rotated so that the chloroform chamber itself is always brought into the vertical position. By this device the risk of spilling the chloroform is avoided and different face-pieces can be adapted to different shaped faces.

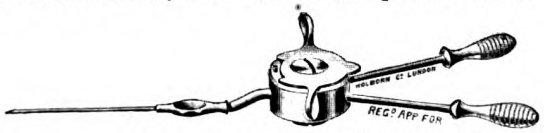
A. D. WALLER, M.D., F.R.S.
Physiological Laboratory, University of London, South Kensington.

[1] A new apparatus for the delivery of chloroform and air of suitable and easily governed strength, Transactions of the Royal Medical and Chirurgical Society, vol. lxxxviii., 1906, p. 15.

[2] On the Dosage of Chloroform, Brit. Med. Jour., April 23rd, 1898.

A NEW INSTRUMENT FOR INTRAVENOUS INJECTIONS.

THE illustration shows a combined needleholder with two-way tap which I have devised for intravenous injections, and which I have found most useful in the treatment of syphilis. The instrument can be manipulated with one hand and the operator has control over the flow of the fluid in both containers. The saline solution or the anti-syphilitic fluid can be instantly turned on or off at will. The tap is closed when the wings are at right angles as in the illustration; a turn to the left opens the left tube,



and a turn to the right opens the right tube. The wings also serve to give the operator a firm grip on the instrument when inserting the needle. It will be seen that this simple contrivance does away with the taps or clips which are usually fixed to the tubing and which require the services of an assistant. The nozzle of the needleholder has a slight crank bend which brings the needle into the plane of the under surface and in line with the vein.

The Holborn Surgical Instrument Company, Limited, are the makers of the instrument.

HAROLD SPENCE, M.D., C.M.

[3] THE LANCET, April 1st, 1916.

THE LANCET.

LONDON: SATURDAY, MAY 13, 1916.

The Supply of Medical Officers to the Services.

WE published last week a letter signed by Sir CLIFFORD ALLBUTT and Sir WILLIAM OSLER laying stress on the probable need for further medical officers in the navy and army, and pointing out that a wide adoption of the system of voluntary enrolment would lead to a fair adjustment of military service among members of the medical profession. As we have said in these columns on many occasions, under a system of voluntary enrolment the medical profession recruits or conscripts its own members, judges their suitability for commissions, and makes arrangements by which the persons selected for commissions are those who can best be spared by the civil community. Only medical men can fully appreciate the difficulties that lie about the path of one practitioner more than of another; only they can sum up the arguments for and against a particular medical man receiving a commission in the navy or the army; and only instructed medical opinion can fairly decide, as between individuals, who is the particular man whose absence from home will least disturb the medical service of any given locality. For these reasons we sincerely hope that during the short time which it can be expected to remain on trial the system of voluntary enrolment will prove successful.

At a meeting of the Central Medical War Committee last week the position of the medical profession under the new arrangements for compulsory military service was closely considered. All citizens, including medical men, between the ages of 18 and 41 are now required to serve, and this fact should strengthen the position of the Central Medical War Committee, seeing that if medical men under 41 do not ask for medical commissions they can be requisitioned as privates. The effect of this may be valuable. A pledge was given, it will be remembered, by the Central Medical War Committee that medical men who enrol would not be called up until 75 per cent. of the possible constituency had enrolled. But before the number of the enrolled had reached 75 per cent. of those presumably available—the exact figure is obviously most difficult to ascertain—the War Office asked for more medical officers, and there must be difficulty about the keeping of the pledge unless the covenant is met by the voluntary enrolment of medical men of military age, that is of under 41 years, who might otherwise be wasted as privates. These men may possibly make up among them, with the large number already enrolled, 75 per cent. of all the medical men up to 45 years of age. So far the Bill should assist the Central Medical War Committee, but there is another side to its influence. The Local Tribunals can absolve a medical man from military service, and we view this situation with some apprehension. Medical men of military age not desiring to serve would certainly meet at the hands of the Tribunals with every consideration, if a claim for exemption were brought forward based upon a desire to discharge medical duties in the district and upon an apprehension lest the local civil community were being deprived of necessary medical service. But the Tribunals will not be in a position to come to well-informed decisions. We feel that if the necessary number of men for the military forces is to be obtained with the least hardship to the civil population, medical men should be enrolled under the authority of a statutory committee rather than be compelled to go before the Local Tribunals. We hope that it is not yet too late for the Government to take this view, but we are quite aware that it has not been received favourably.

Of course, the Government may not be willing to recognise the Central Medical War Committee as so adroit a body as to be able to act both as a recruiting agent and as a local tribunal. Yet this is the method by which the right officers for both the navy and army could be obtained, and the Central Medical War Committee would be quite justified in taking the responsibility of the position, reinforced as it is by a strong reference committee appointed by the Royal College of Physicians of London and the Royal College of Surgeons of England. This reference committee, though added to the body especially to consider the position of the medical staffs of the metropolitan hospitals, was definitely appointed to assist generally with authority and advice in all the work of the committee, and in this way the Central Medical War Committee derives authority and prestige from the ancient corporations, and a position from which to seek recognition as a statutory committee. We must all recognise the absolute waste implied in using qualified medical men as privates in the trenches. As a matter of fact, we cannot believe in the qualified doctor who prefers to be a private, and as far as the medical profession is concerned the Military Service Bill may be considered to be a sort of conscription of officers rather than of privates, for every medical man under 41, being conscripted, will ask for a commission in the Royal Army Medical Corps. When this position is reached the Central Medical War Committee might well have very valuable work before it, for it is the only body which can select the medical officers of the navy and army fairly and without any local bias. Its work depends on that of local committees so that it can deal justly between individual medical men and between the medical profession and the public. If the Government gives the statutory position to the Committee, its personnel could be strengthened in any way that was desired by nominees knowing their business. We quite appreciate the reluctance that there will be to set up a special sort of tribunal for one class of the community, but it must be remembered that medical men are distinguished from other sections of the public in this respect, they are

ready made for the army. They are wanted as medical men, and as medical men they are in the best position to know which of their body should be taken, and which should be left.

The Medical Examination of Recruits.

THE provision in the new Military Service Bill for the medical re-examination of rejected men has again called attention to the circumstances under which recruits are examined to ascertain whether they are medically fit to be trained for military service. From the beginning of the war there has been a constant call for more men to join the army, and at times the pressure on the doctors who were charged with the duties of examining them was extremely severe. Experience has shown that during the great rushes to the colours the medical examinations were in many cases hasty; this was inevitable, but too many men were passed who subsequently proved totally unfit for the purposes required. Many of these broke down soon after enlistment, were sent to military hospitals, and were then discharged to depôts for duty, only to drift back to the hospitals again. They thus became a source of considerable expense to the country, and attempts to make soldiers of them utterly failed. A large number of these men had such physical disabilities that they ought never to have been admitted. Some, it is to be feared, exaggerated or feigned their symptoms, so that they might enjoy a quiet time in the hospitals, whilst others were genuinely anxious to continue in the service, and were perfectly willing to undergo operations for varicose veins, hammer-toe, and so on, in order that they might play their part as patriotic citizens. In dealing with men sent into the military hospitals, especially those who have had under six months' service, it is often particularly difficult to distinguish between those who are actually suffering from a disability which would render them unfit for further military service and those who are malingering; the former, of course, should be discharged on medical certificate, whilst the latter should be sent back to duty. The differential diagnosis, however, often puzzles the most experienced physicians and surgeons. Whilst during these times of pressure unfit men may have been accepted, a certain number of perfectly fit men were probably rejected, and thus the numbers admitted may have been in a certain sense adjusted, but the economic difference has been immense. Further, some men may have been rejected on account of conditions then existent which have since been cured, just as other men, perfectly sound on enlistment, have developed disease which would necessitate their discharge. On these grounds (with a proviso presently to be mentioned) we think that the decision for re-examination is justified.

For a medical test to be satisfactory it must be thorough, and it is obviously false economy to appoint too few medical men for the purpose, or to press them with too many recruits in a single day, for as we all know, men hastily examined have given rise to great expense, which, with better organisation, might have been avoided. Candidates for admission to Woolwich and Sandhurst have to pass through a rigid medical examination, and in order to secure men healthy and strong in every way, a similar plan should be adopted for those intended for the rank and file. Needless to say, after the eyesight has been found to be up to the standard, each man should be stripped so that the chest can be satisfactorily examined, and such disabilities as hernia, varicose veins, and flat feet may not escape notice. Some deviations from the healthy standard may be difficult to assess, such as certain physical signs in the chest which may not necessarily be of serious import, or a varicocele which is not sufficient to interfere with military training; to deal with such instances there should be an appeal board composed of experienced physicians, surgeons, or specialists, who would give a final opinion. The absence of some such advising and correlating authorities, coupled with avoidable muddling, has led to a margin of error in the passing of recruits, which has been considerable. The unsatisfactory character of some of the examinations has been duly recognised, and since Jan. 20th of this year an improved system has been instituted by the War Office. Recruiting boards were then set up under the control of men specially chosen and approved, and as far as our information goes distinct improvement has taken place. For this reason we consider that the proposed re-examination should only apply to those men who had been examined previously to Jan. 20th of this year, this being the proviso referred to above. We would also urge that the medical men who are deputed to carry out such re-examinations should be those who have had especial experience as physicians and surgeons, for many of the cases to be reported upon must present problems not altogether easy to solve, and consultations between the examiners would naturally be of considerable advantage.

So far we have had in mind only the examination of recruits for general service. Men who are found unfit for duty overseas may be considered fit for field service at home or garrison duty at home or abroad, or in a purely sedentary occupation or in a labour section. The standard required for general service would not be required for home service or for office work, especially in regard to vision, but nevertheless it would be false economy to admit men with a disability which would be likely, under stress of work, to place them on the sick-list. We would strongly urge the imprudence of lowering the line here too far. There are many men invalided from the front who are perfectly capable of undertaking duty in home service, while it will probably be found that many individuals who are unfit for general service, or for field service at home, will be of more value to the community if retained undisturbed in civil life. It is the disturbance of routine that so often proves fatally trying to the subject of impaired physique.

Annotations.

"Ne quid nimis."

THE LONDON WATER-SUPPLY: A YEAR'S WORK SUMMARISED.

ATTACHED to the report recently issued on the condition of the Metropolitan water-supply during the month of December, 1915, is an appendix by Dr. A. C. Houston, the director of water examinations, summarising the results of the chemical and bacteriological examinations of the London waters for the 12 months ended Dec. 31st, 1915. The importance of storage is again confirmed, while there is recorded the striking fact, shown in past reports, that London is not drinking merely filtered raw river water, but raw river water which by storage processes has been purified bacteriologically antecedent to filtration, and this to a remarkable extent. But, as Dr. Houston points out, implicit belief in the value of storage does not imply that the quality of water taken into store is a matter of no importance, otherwise the idea might well be entertained that the purification of sewage in a given watershed was of no consequence. The aim of a water authority must still be to choose water for storage purposes in as pure a condition as is practicable, and the protection from risk of water-borne epidemic disease conferred by storage must never be regarded as more than relative and supplementary. About 80 per cent. of the London water-supply is derived from rivers either directly or indirectly polluted with sewage, but Dr. Houston says that within recent years a marked improvement has taken place in the methods of purifying sewage so as to render the resulting effluents non-putrescible and chemically unobjectionable. Apart from sterilisation, however, no practical process has yet been found which turns out a "safe" effluent, *bacteriologically*, and the great majority even of chemically-satisfactory effluents are, Dr. Houston says, swarming with excremental bacteria. It is possible that improved methods of purification will, from a chemical standpoint, keep pace with increasing pollutions of the Thames and Lee, but the outlook bacteriologically is, according to Dr. Houston, less hopeful. The raw waters of the Thames and Lee contain B. coli in undesirable numbers, but fæcal streptococci are seldom discoverable in one cubic centimetre of the water; and if pathogenic microbes are present at all their numbers must be so small that it is hardly conceivable that any of them could survive passage through the storage reservoirs and reach the filter-beds, which in their turn remove about 98 per cent. of bacteria of all sorts. Storage, moreover, gives trouble in one odd direction—algæ develop occasionally, and the occurrence leads to difficulties of filtration and to unpleasant taste and smell in the water. Apparently no preventive measures can with any confidence be suggested to meet this nuisance, but as the conditions favouring the growth of the algæ are better understood means may be found of preventing or retarding their development. In February, 1915, the West Middlesex water developed the fishy odour which had been prominent in this supply in the year 1912–13, and there was much alarm occasioned amongst the consumers supplied from this source. The cause was traced to the growth of Tabellaria in the West Middlesex reservoirs. The algal taste was successfully overcome by the addition of potassium permanganate in the proportion of 5 lb. per million gallons of water. It is curious that chlorine preparations, as for example, bleaching powder, were either useless for the purpose or were not equal to the efficient action of the permanganate. The incident was reported in our columns, and affords good reason for believing that with increasing knowledge the water authorities will be able to deal successfully with what at present is a serious if infrequent source of annoyance to the public. Accidents will happen in spite of all the refinements of precaution in regard to storage and filtration, and when they do they generally destroy all the good work of purification that has been done. Constant vigilance is needed in connexion with questions of drainage, health of workmen, suction of impure water into water mains, repairs of mains, and so forth, in order that the water purified with such care may be guarded against any possible source of subsequent infection. But the sum of Dr. Houston's findings appears to be that the evil potentialities of an impure source can be largely, if not entirely, annulled by adequate storage and filtration. An initially pure source is vastly preferable, but sometimes impossible to obtain. There are risks of a breakdown in the London system, but so far the policy of storage and filtration has preserved a pure supply of water for metropolitan needs from river sources. And it has saved London from the immense undertaking and expense which would be incurred by seeking elsewhere for purer sources of supply, as, for instance, from an adequate watershed situated as far off as Wales.

CRIMEAN MEMORIES.

"IT is curious at the present time to dip into old volumes of THE LANCET and to compare the state of military hygiene as it affected surgeons in the Crimean campaign with that of the great war now raging." Thus writes a correspondent. The miserable state of our ambulance and hospital system in 1854–56 has long been proverbial. "Our surgeons are treading on infernal machines before Sebastopol," says a review of a work on the Ambulance System in THE LANCET of July 7th, 1855, "contending against cholera and the poisonous exhalations of Perokop, fifty-four surgeons and our so-called sanitary officers in the Crimea being dead." Obituary notices of deaths of army surgeons occur in every number of the medical journals of the Crimean epoch. They seem all to bear witness to mismanagement on the part of the authorities and to heroism on the part of the dead. Between the middle of September, 1854, when the Allied troops landed in the Crimea, to July, 1856, when they evacuated it, the list is formidable enough. A Mr. Read, staff-surgeon in charge of the medical stores at Scutari, dies from cholera on Nov. 28th, 1854. William A. Anderson, surgeon 41st Regiment, dies from typhus on board ship in the harbour of Balaclava (Jan. 3rd, 1855). On Jan. 20th Alexander Struthers, M.D., a young man of great promise in his profession, and brother of the famous lecturer on anatomy, dies from fever at Scutari. He had been overworked while attached to the barrack hospital. It was overcrowded with fever patients, and he contracted the infection on Christmas Day, recovered, and relapsed. Dr. Wason, one of those who attended him, died on

Feb. 7th, and they lie buried on a height overlooking the Sea of Marmora. John Newton, second-class staff-surgeon, dies also at Scutari on Jan. 26th, as does Frederick A. Macartney on Feb. 12th. On Feb. 8th we read of the death from fever at Balaclava of Francis Smith, surgeon to the 95th. At the end of the month the sanitary state of the army at Sebastopol is described as improving, but typhus and typhoid are still raging at Scutari and Balaclava. A vast mass of putrefying matters are still said to be lying about the camp at Sebastopol. The climate is described as most capricious, alternating between heat and cold, with piercing north winds at night which were very trying to the soldiers. At the same period we read of mismanagement in the matter of transport of the wounded. Ambulances are tried which are swung on vulcanised indiarubber springs, but prove to possess an uncomfortable jogging motion. There is, at a later period, an account of the trial of a knapsack invented by Berington, which is found not to drag on the armpits as does the army knapsack of the time. It had not yet been adopted in the army, and THE LANCET remarks: "We should have thought that by this time the shortcomings of all the arrangements in force with respect to the equipments of our troops and their influence for good or evil on the health of the army ought to have been perceived, and the remedies applied where found to be necessary." On Feb. 16th, 1855, John Grabham, assistant surgeon, 71st Regiment of Foot, dies, aged 24, at Scutari, from malignant fever contracted in the zealous discharge of his duties at the General Hospital. Dr. Lamont dies from fever before Sebastopol, aged 22, in January. In March, Edward Leblanc, surgeon of the 9th Regiment, is shot dead accidentally by a French sentry. On April 4th Ludlow Harvey, aged 29, dies at the British Hospital, Scutari. He was acting assistant staff-surgeon at the time of his death, and had been most honourably mentioned for efficiency in charge of the sick and wounded on board the steamer *Trent*. He was surgeon to the Royal Free Hospital and a medical journalist. On April 21st Dr. Hector Gavin is accidentally shot by his brother when in their tent before Balaclava and dies after great agony. He is described as a man of indomitable perseverance and energy. Other names of surgeons who died in the performance of their duty in the Crimea or at Scutari are Robert Thomas Simons (April 28th), Alexander Wishert (May 25th), Dr. Walter Simpson (June 3rd), Dr. Ninian Hill (June 22nd), Roy Samuel Millard (June 9th), Lawrence Ormerod (June 20th), A. Sibbald (June 26th), John Horsley White (July 3rd), John Longmore (August 22nd), Edward John Complin (Oct. 29th). Fever is in almost all cases the cause of death; none fell as now, before the bullets of the enemy. In October, just before the last-recorded death of a surgeon in 1855, THE LANCET heads a vigorous leading article "Mr. Bracebridge's Abuse of Crimean Doctors." He had been to the front and lectured in Coventry on his return to England on what he deemed the inhumanity and backwardness of the English army surgeons. He compared them unfavourably with the French surgeons, who were then held, with the Austrians, to be in the van of military surgery. THE LANCET writes of Mr. Bracebridge in a way that would to-day be highly dangerous, though every syllable and insinuation were true. Clearly the exposure was merited, for it is not possible to find any recorded cases of callousness on the part of army surgeons at that time save one. The accused in this case was court-martialled for neglect of the wounded and was condemned to a term of imprisonment. Before the close of 1855 we read that he had died in confinement and that he was insane.

THE SECRETION AND EXCRETION OF SALVARSAN AND NEOSALVARSAN.

IN an interesting paper read before the Society of Public Analysts at a meeting held on May 3rd Mr. John Webster, F.I.C., presented the results of some analyses showing the relative amounts of arsenic found in the various organs after injections of salvarsan and neosalvarsan. Special attention was drawn to the relatively very high proportion of arsenic present in the kidneys. In one case a post-mortem examination had shown that nephritis was present. Various analyses of urine were made showing the variability of the rate of excretion. Analyses of human milk from two cases of salvarsan treatment were referred to and the results indicated that after a dose or repeated doses of salvarsan the milk of a lactating woman is entirely, or almost entirely, free from arsenic. A minute trace of arsenic was found in one specimen only. Mr. Webster expresses the opinion that any beneficial results to the syphilitic child fed on such milk cannot be due to the presence of salvarsan or other compound of arsenic present in the milk of the mother.

THE INFLUENCE OF MATERNAL NUTRITION ON LACTATION.

WITH the price of food rising and the difficulties of transport increasing, it is of importance to consider what effect, if any, the nutrition of the mother will have on young infants. Although there appears to be very little probability of any actual shortage of the necessities of life to the civil population of this country, yet the state of refugees retreating before invaders and the occurrence of sieges elsewhere may give rise to conditions which impair the nutrition of the mother to a marked and serious degree. The far-reaching effect of malnutrition on the mother is obviously a subject of considerable importance, but little has been published concerning it. In this connexion a paper read by Mr. G. F. Darwall Smith at a meeting of the Royal Society of Medicine some years ago is very pertinent. The paper was the result of an investigation made for the Local Government Board and the full results have not yet been published so far as we are aware. For the purpose of the investigation over 6000 consecutive cases were taken from the notes of lying-in hospitals in London and Dublin. The nutrition of the mother was estimated by taking her height and weight ratio, the report of the medical officer made especially for the purpose, and the patient's own history as to any difficulty that she may have had in obtaining adequate nourishment. Based on these three criteria, the 6000 cases were divided into three groups of bad, average, and good nutrition. All sources of error, as far as possible, having been excluded, the results and statistical tables were presented with great care. Regarding the mother's capability for suckling, it appears that a poor state of nutrition causes a definite diminution in the patient's ability to suckle. For example, of a thousand unclassified patients over 99 per cent. were able to feed their babies entirely on the breast, but taking patients in a bad state of

nutrition only it was found that under 73 per cent. were able to suckle successfully. Contrary to what might be expected, the state of nutrition of the mother at the time of labour did not have much effect on the progress of breast-fed babies who survived the ten days that they were under observation. It must be remembered, however, that during the puerperium all patients were inmates of a hospital, and so were presumably receiving an ample diet. Mr. Darwall Smith's conclusions were that the figures obtained seemed to suggest that a state of bad nutrition of the mother at the time of labour due to insufficient food (*a*) greatly increases the percentage of premature and also of dead-born babies; (*b*) slightly decreases the weight of the full-term child at birth; (*c*) decreases the ability of the mother to feed the child; and (*d*) greatly increases the post-natal infantile mortality during the first week of life.

A NEW GREEK MEDICAL PAPYRUS.

THE eleventh volume of the "Oxyrhynchus Papyri," which are stored at Oxford, has recently been edited by Dr. B. P. Grenfell and Dr. A. S. Hunt, and published by the Egypt Exploration Fund. It contains one medical manuscript, a Greek recipe for a purge. The ingredients do not present any novelty to scholars acquainted with those commonly to be found in the so-called *hiera* (mixtures) of Græco-Roman times. The text runs as follows: "Ingredients of a purging draught: Cummin 4 drachmæ, fennel 2 dr., parsly 4 dr., costus 4 dr., mastich 4 dr., coriander 7 dr., 21 laurel berries, nut dr., ham (?) dr., pennyroyal dr., silphium (?), salt, vinegar." The number of drachmæ for a few of the constituents has become obliterated. The word πέρνα, rendered "ham," has probably some other meaning indicating a herb, but a comparison with the lists of ingredients in similar Greek recipes has so far failed to suggest which plant it refers to. The word rendered here silphium is φύλλον, which was a title at this period for silphium from Cyrene. Classic medical authors sometimes used φύλλον to indicate betel-nut. Silphium (asafœtida) is almost certainly the correct interpretation. This papyrus also contains two notes upon the healing art as follows: "For strangury, to heal the sufferer, take the dry seed of basil-thyme, crumble it with wine of Ascalon, then drink it hot." The Ascalon wine was celebrated above all the vintages of Syria. The second says: "For treating wounds, take the fruit of a cypress and boil it and apply." The remainder of this fragmentary manuscript is occupied with some partly legible portions of what appears to be an apocryphal gospel concerning healing of the sick, not only human sufferers, but angelic ones, the latter being affected with ocular disease. These sentences are quite obscure.

CHILDREN'S COUNTRY HOLIDAY FUND.—Mr. A. F. Buxton, Chairman of the London County Council, sends us a letter pleading for money and voluntary workers on behalf of the Children's Country Holiday Fund, and asking the public to spare a thought for the thousands of elementary school children whose only escape from London and their own stuffy crowded quarters is the fortnight in the country organised by the Fund. At no previous time in the history of the nation has it been so necessary that the health of children should be preserved in every possible way, and the Children's Country Holiday is a very helpful factor in this direction. It is hoped that about 16,000 of the most suitable little cases may be sent this year to gather fresh stores of health in the country, and donations and offers of help should be sent to the Secretary of the Fund, or to Mr. Buxton, at 18, Buckingham-street, Strand, W.C.

THE DUBLIN RISING.

(FROM OUR OWN CORRESPONDENT.)

YOUR readers are by now familiar with the principal events of the Dublin rebellion of Easter week which have been graphically and, on the whole, accurately recorded in Mr. John E. Healy's letters to the *Times*. I am therefore concerned merely with the medical aspects of the rising.

A considerable number of casualties occurred on Easter Monday in the first few hours of the rising, as the rebels did not hesitate to shoot anyone—soldier or civilian—who hampered them in their activities. The civil population, however, soon learned that the rebels were in earnest, and as long as no active interference was offered the rebels do not seem to have molested civilians to any great extent. Moreover, it was not until Wednesday that the military began any serious attack on the rebel strongholds. It was, therefore, in the latter half of the week, from Wednesday afternoon, when the military began their work seriously, to Saturday afternoon, when the principal rebels surrendered, that the number of casualties was greatest.

Estimate of Casualties.

Of the total number of casualties any estimate is only loosely approximate. The *Irish Times* of May 6th gave a list, compiled from the records of the city hospitals and from other trustworthy sources, of 160 civilians who had been killed. There must have been many more whose deaths have not been reported, and 200 in all is a conservative estimate. The number of soldiers killed is probably somewhat less.[1] Of the rebels no figure can be given. In only a few cases were dead bodies in rebel uniform brought to the city hospitals, though, as many of the rebels wore no uniform and carried no equipment other than a bandolier and a rifle, it is possible that some of those returned as civilians were in truth rebels shot while carrying arms. Of wounds, Jervis-street Hospital, which is in the centre of Dublin, close to the General Post Office, treated some 400 cases. Mercer's Hospital, which is close to the Royal College of Surgeons, treated 130 cases of shot wounds. The City of Dublin Hospital and Sir Patrick Dun's Hospital, which are near the Northumberland-road and Mount-street Bridge area, also treated large numbers, and all the city hospitals, as well as the Dublin Castle Red Cross Hospital and the King George V. Military Hospital received their share. The total may have been anything between 1000 and 2000. The great majority were, of course, civilians, including a large number of women and children. This is, perhaps, inevitable in street fighting, especially when the locality is strange to both troops and officers. The presence of a few rebels, or even of one sniper in a particular house or court, endangered the lives of several score innocent persons, and in many cases those innocent suffered for the guilty. Civilians were also shot by the rebels, chiefly in the first hours of the outbreak.

As the arms varied greatly, so also did the character of the wounds. The wounds produced by military rifles were such as the war has accustomed surgeons to, but the number of head wounds was notably large. Most of these were received by civilians who incautiously looked through their windows while the military were being fired at by rebel snipers in their neighbourhood. The firearms possessed by the rebels seem to have varied within the widest limits. Many of them apparently had serviceable rifles, such as Mausers and Winchesters, but all sorts of arms were used. Many round bullets have been picked up, and it is probable that they were fired from shot-guns, the bullets being substituted for shot in the cartridges. It is said that the rebels were possessed of a few machine-guns.

It is too soon to judge of the effects of treatment, but one may hope that the results will be better than have been generally seen in military operations in France. In the first place, treatment was given speedily, and in the second the clothes of the wounded were fairly clean, and were not, as in France, sodden with infective mud.

Hospital and Ambulance Arrangements.

Some of the hospitals which gave most attention to the wounded have already been mentioned, but as fighting was taking place simultaneously in several quarters of Dublin, all the city hospitals were kept busy. In some instances the wounded could not, on account of danger in the street, gain

[1] The Government casualties have been announced as 124 killed, 388 wounded.

access to the general hospitals, and the special hospitals gave accommodation willingly. In particular, the National Maternity Hospital in Holles-street received a great many civilian patients. The Rotunda Hospital, which was for some time occupied by the troops, also treated casualties and received dead bodies, while the Royal Victoria Eye and Ear Hospital took overflow patients from several institutions.

Two urgency hospitals were opened by the local branches of the British Red Cross Society and the St. John Ambulance Association, one in Merrion-square with 20 beds, and one in Lower FitzWilliam-street with 25. They served as overflow hospitals for Sir Patrick Dun's and Mercer's Hospitals respectively. The staffs of the several hospitals worked under great difficulties. In some cases surgeons were unable to reach their own hospitals at all, and in most cases those who were able to get to their hospitals had perforce to stay there for several days. The members of the staffs of the Adelaide, Jervis Street, the Mater Misericordiæ, and the Richmond Hospitals, for instance, were virtual prisoners in these institutions from Easter Monday or Tuesday to Saturday or Sunday. Many of the hospitals were repeatedly struck by bullets, but I have not heard of any casualty in a city hospital. For a night and a day Jervis Street Hospital was in imminent danger of fire, as the great Sackville-street fire steadily approached it by the two lanes of Henry-street and Abbey-street. The same hospital was threatened by the fire of a big gun, the officer in charge of which was unaware that the building was a hospital. The Adelaide Hospital, close to Messrs. Jacobs's factory, a rebel stronghold, had to stand some rounds from a machine-gun intended for Jacobs's. As the city gas-supply was cut off early in the week operative work in the hospitals was rendered very difficult.

The work of transporting the wounded to hospital was performed with much courage. Royal Army Medical Corps ambulances plied to the Castle and the King George V. Hospitals. The city and township ambulances and the fleet of ambulances organised more than a year ago by the Irish Automobile Club were worked unceasingly, and with consummate courage. Volunteer stretcher-bearers, medical men, medical students, clergy, nurses, dentists, ambulance workers, went unflinchingly wherever they were required. In particular, the nurses of Sir Patrick Dun's exposed themselves in the thick of a fierce battle picking up wounded on Mount-street Bridge. It is right to say that the rebels, equally with the military, appear to have showed respect for the Red Cross, and there is no evidence that it was deliberately fired on. One ambulance worker was unfortunately killed, and three officers of the Royal Army Medical Corps—Major C. A. J. A. Balck, Captain J. T. McCullagh, and Lieutenant H. L. Mooney—were wounded. A nurse was killed in the South Dublin Union. No workers were more unceasing in their exertions than the clergy of the city parishes. They went everywhere, by day and night, trying to keep their parishioners out of danger, distributing food and helping the wounded. One clergyman was severely wounded.

It is impossible to know what arrangements were made by the insurgents for giving relief to their wounded. There is no doubt that in many of the strongholds there were women who had training in first-aid work, but the arrangements must have been crude. Report says that two medical practitioners had associated themselves with the rebels. One is said to have been taken prisoner by the military authorities when they captured the City Hall from the rebels. Another is stated by rumour to have taken an active part as a combatant rebel officer. The daily papers report the arrest, whether on suspicion or not, of a medical practitioner in Galway.

The Difficulties of the Civil Population.

The privations suffered by the civil population from want of food and other supplies were less than might be expected. Traders acted with great consideration, opening their shops in districts where it was at all possible. A large bakery, situated in the southern suburbs, was able to make deliveries to a great deal of the southern part of Dublin, but on the northern side privation was greater. The greatest suffering was in certain of the poorer districts where no one could leave the house without danger of being shot, and many had to choose between the chances of a bullet and of starvation. As few traders would make deliveries, householders had to venture out to bring home their own supplies, and the situation had its humorous aspect. Society ladies and women from the back streets crowded together round the bakers' carts. Judges and staid professional men might be seen hastening across dangerous crossings with bare loaves or joints of meat under their arms. The writer met one of the leading physicians going home after his morning's shopping, and sadly complaining that all he was able to get was a bar of soap! The president of one of the medical associations was seen dragging a bag of coal along the street to his coal-cellar. The hospitals appear to have been sufficiently supplied with stores, and these were augmented as occasion permitted by supplies distributed by the Red Cross depôts. Before the end of the week the authorities had arranged for distribution of food and other necessary stores in different quarters of the city.

Considerable inconvenience was, of course, caused by the military monopoly of the telephone service, but consideration was shown in permitting urgent medical calls to go through whenever possible. Medical men generally, however, have been not a little surprised by the ease with which most of their usual patients dispensed with their attendance for so many days. Chemists, like other traders, showed courage in giving all possible facilities to customers elsewhere than in the actual area of battle.

As the Royal College of Surgeons was one of the first buildings to be occupied by the insurgents, there was much anxiety as to the condition in which the building and equipment would be found. When the rebels evacuated the building, however, on Sunday afternoon it was found that the damage was slight. The windows overlooking St. Stephen's Green were, of course, riddled by rifle and machine-gun fire, and some damage was done to the walls and furniture of the front rooms. Some of the library books had been taken from their places to form barricades, and were more or less damaged. A large portrait of Queen Victoria which was hanging in the board-room was deliberately destroyed. No further wanton damage was done, however, and educational apparatus, furniture, and papers had been treated with respect. It may be added that the condition of the Four Courts, which was also occupied, was similar to that of the College of Surgeons, no wanton damage being done.

Recognition of Services of Medical Men and Nurses.

Dublin is now speedily returning to its normal condition. Martial law is still in force, and citizens are not permitted to be abroad after 8.30 at night. An exception to this rule was made from the first in the case of medical men, but nevertheless a medical man going about at night did so at considerable risk. While sniping was still going on, a sentry was likely to shoot first at anyone out at night and investigate afterwards. At the same time, it is right to say that both officers and men showed every possible courtesy consistent with their own safety to medical men and other citizens going about their lawful business. That the military authorities recognise their debt to the medical men and nurses of Dublin is shown by the generous terms of the following Order issued by the General Officer Commanding-in-Chief:—

Headquarters, Irish Command, Parkgate, Dublin,
7th May, 1916.

I desire to express my sincere appreciation of the services rendered during the recent disturbances in Dublin by the medical, surgical, and nursing staffs of many of the city hospitals, and in particular of the gallantry shown by those nurses who exposed themselves to a heavy fire in attending to and removing the wounded.

Also to the members of the Red Cross and St. John Ambulance Societies and the many medical men and private individuals who gave assistance in attending to the wounded or placed their houses at the disposal of the military for use as dressing-stations.

In numerous instances these services were rendered at considerable personal risk and under circumstances reflecting the greatest credit on those engaged in them.

(Signed) J. G. MAXWELL, General,
Commanding-in-Chief the Forces in Ireland.

DONATIONS AND BEQUESTS.—A bequest of £1000 has been made to King Edward VII. Hospital, Windsor, by Mrs. Golden in accordance with a wish expressed by her late husband. The amount represents Mr. Golden's accumulated savings, which had not been trenched upon by his widow, though her means were very limited.—The Duke of Northumberland has subscribed £300 to the appeal for King's College Hospital, Denmark Hill.—By the will of the late Right Hon. John Frederick Cheetham, M.P., the testator, among other bequests, left £1000 each to the Victoria University of Manchester and the Ashton-under-Lyne District Infirmary.

NOTES FROM INDIA.

(FROM OUR OWN CORRESPONDENTS.)

Bogus Medical Degrees Bill for India.

Sir Pardey Lukis, Director-General, I.M.S., in presenting this Bill in the Imperial Legislative Council, said that replies from authorities consulted showed a very large consensus of opinion in favour of the principle of the Bill. He specially drew attention to the views of the Bombay Medical Union. With very few exceptions, criticisms had been levelled at details. These criticisms would receive sympathetic attention by the select committee. The object of the Bill (which would apply to all medical schools, whether Government or independent) was that no teaching institution should examine its own students, but that it should conform to certain definite standards, should submit to outside inspection, and should affiliate itself to one or more of the sanctioned examining bodies. There were three grades of affiliation—namely, to the licentiateship or membership of the State examining body, the former corresponding to the diploma of the sub-assistant surgeon, and the latter to the old L.M. & S.; or to a recognised university for degrees of M.B., &c. The object of the Bill was to improve the status of the independent medical colleges, not to destroy them. Sir Pardey Lukis said that the College of Physicians and Surgeons of Bengal was recently granted by the Senate of the University of Calcutta provisional affiliation up to the preliminary scientific standard for the M.B. degree. He hoped also that ere long it might be possible to affiliate one of the other independent colleges in Calcutta to the State Medical Faculty of Bengal. Meanwhile Bombay had received a munificent offer of 12 lakhs of rupees from the trustees of Mr. Gordhandas Sundardas for the foundation of a second medical college in that city to be staffed by Indians not in Government service, and to be affiliated to the Bombay University. He trusted most sincerely that it might be possible to utilise this very generous gift, and that the example of its donor might stimulate the rich and charitable nobility and zemindars of Bengal to come forward with the money required to place upon a sound footing the independent medical colleges in Calcutta, to one of which the Government of India had sanctioned a grant of 5 lakhs non-recurring and Rs.50,000 recurring on certain conditions which would, he trusted, shortly be fulfilled. After some criticism, the Bill was referred to a select committee.

Anti-malaria Measures.

In the Imperial Legislative Council Mr. Surendranath Banerjee moved a resolution that Provincial Governments be instructed vigorously to combat malaria, and to report annually the progress made. He said that malaria had decimated some of the fairest parts of Bengal, and strongly urged Government to improve rural sanitation. Sir Edward Maclagan, in reply, said that Government were ready to accept the resolution. What they ultimately wanted were practical measures for preventing or mitigating malaria, but these must always be preceded by investigation. The form of prevention to be adopted differed considerably. Malaria was in some places epidemic and in others endemic. In some places it might be due to excessive water, in others to defective water; in some areas certain measures were feasible, in others they were not, and so on. There were a few general principles upon which action could be taken, and the Government of India had briefly alluded to these in their recent resolution on sanitary policy. But circumstances differed so greatly that Provincial Governments alone were in a position to decide on the measures to be taken. Further, there was the limitation due to finance and the staff which was available at the present time. It could not be properly assumed that there had been any marked increase in the disease in the last few years. But whether it had increased or not, it was their duty to do the best they could to cope with it. Here it might be said without dispute that as regards malaria, more had been done by the Government during the last 10 years in India than by all the Governments during all the preceding centuries. He then gave an account of the anti-malarial work undertaken by the Government of India and the Provincial Governments.

Anti-malaria Operations in Bengal.

At the Bengal Legislative Council on March 15th the Hon. Rai Radha Charan Pal Bahadur moved a resolution to the effect that a sum of one lakh of rupees be allotted for anti-malaria operations in selected areas, preferably in the Presidency Division. He said that malaria was the greatest scourge in Bengal and caused more sickness and misery than any other single disease. The Government had taken certain measures such as the free distribution of quinine and the supply of pure drugs through the agency of travelling dispensaries, but these had been insufficient. He referred to the theory advanced by Dr. C. A. Bentley with regard to getting more water to the surface and scouring out silted-up rivers. He believed that if Dr. Bentley's suggestions were put into effect the Presidency Division would be benefited. The Maharaja of Nashipur supported the motion. Dr. Nil Ratan Sircar said that though there was no question of funds in this case, the expert advice stood in the way of the Government carrying out contentious measures in that province. He referred to the views of the Drainage Committee, who quoted Sir Ronald Ross on the value of jungle-clearing and making the land near habitations water-tidy. But they were now told that these measures would be quack sanitation in Bengal, and that against all anti-malaria measures which had been found successful elsewhere there was only one measure as a remedy for malaria, and that was flooding the country with silt from flood water. The speaker was not against bonification where applicable, but protested against jungle-clearing and draining water-tidiness in proper areas and general sanitation being set down as useless and injurious measures. The Hon. Nawab Shams-el-Huda, in reply, said that Government could not agree to preference being given to the Presidency division, as other divisions and districts were equally malarious. If a suitable scheme were recommended they were prepared to give a lakh of rupees for experiments. The resolution was then withdrawn.

April 13th.

THE SERVICES.

ROYAL NAVAL VOLUNTEER RESERVE.

Surgeon C. F. A. Hereford to the *Vivid*, additional, for disposal.

The following have been entered as Surgeon Probationers for temporary service:—H. Thomson, J. K. Murray, F. Gray, G. E. Rae, N. B. Gadsby, D. L. M. Tod, W. T. Benson, J. N. Gale, St. G. B. B. Gray, J. Allan, J. W. S. Blacklock, D. C. Lamond, M. K. Jardine, G. Paterson, G. W. T. H. Fleming, E. L. Ewan, O. Gray, F. W. Lemarchand, A. B. Macdonald, E. M. Fraser, E. A. Sparks, and D. McClean.

ARMY MEDICAL SERVICE.

Colonel J. Maher, C.B., to be temporary Surgeon-General whilst a Director of Medical Services.

Temporary Colonel A. W. Mayo-Robson, C.V.O., relinquishes his temporary commission.

ROYAL ARMY MEDICAL CORPS.

Majors to be temporary Lieutenant-Colonels:—H. H. J. Fawcett, whilst commanding a Field Ambulance; and R. B. Hole, whilst commanding a Casualty Clearing Station.

To be temporary Lieutenant-Colonels whilst commanding Casualty Clearing Stations:—Major D. L. Harding, D.S.O., and Major R. F. Ellery.

To be temporary Majors:—Temporary Captain G. Taylor; W. J. Prendergast, whilst employed at the 1st Birmingham War Hospital; H. French; and W. C. G. Ashdowne, whilst employed at the 1st County of Middlesex War Hospital.

Temporary Lieutenants to be temporary Captains:—N. L. Prichard, G. Norman, R. McI. Muir, R. H. Rollinson-Whitaker, J. Dunbar, J. H. Johnston, E. Weatherhead, M. Bridgman, B. T. Saunders, R. Williams, C. J. Gibson, W. B. Lawrence, G. A. Renwick, J. R. MacCulloch, C. G. Adams, C. R. R. Huxtable, J. Connell, W. J. Hill, M. H. E. R. Montesole, J. W. Heekes, W. F. Abbott, F. A. Hort, I. Campbell, J. Brown, C. A. Farrell, E. C. Wallace, R. M. Clarke, H. H. Clarke, H. M. Meyrick-Jones, C. J. Butler, B. Sweeten, C. H. T. Ilott, R. C. Fuller, G. F. Holt, R. N. Salaman, J. T. McConkey, C. A. W. Pope, W. T. Hedley, T. Strain, A. G. R. Ritchie G. A. Simpson, D. Cowin, W. S. Langworthy, M. T. MacMahon, C. F. White, R. Richards, W. C. Gavin, J. M. Pooley, E. W. Lynch, W. Salisbury, H. J. Hickin, V. H. Mason, H. E. O'Brien, N. Campbell, P. H. Delamere, A. H. Priestley, J. R. Robertson, J. H. Moir, A. M. Cowie, L. W. Batten, A. D. Bigland, H. R. Dew, R. K. Birnie, J. Morlet, A. Weigall,

G. C. Scantlebury, J. G. Sleeman, W. A. L. H. Henderson, A. W. Bretherton, T. E. George, W. A. Bowman, W. A. H. Birrell, W. Rogerson, W. S. Newton, G. C. Bury, G. B. Courtney, R. McC. Service, J. Porter, F. J. Pierce, R. J. Merson, F. W. S. Stone, L. G. Davies, T. S. McIntosh, J. C. Sale, T. D. Kennedy, K. Simpson, J. Scott, H. M. Spoor, H. F. Nolan, H. H. Moffatt, G. H. Darlington, F. G. Wrigley, J. H. Marshall, A. L. Weakley, V. J. Batteson, G. S. Goodwin, J. Rowat, J. J. Robb, A. M. Warwick, B. E. Wright, C. S. Crichton, W. G. Hopkins, G. S. Applegate, R. M. Walker, A. H. Butcher, A. E. Druitt, R. Kenefick, G. R. Lipp, T. Stansfield, W. J. J. Arnold, W. Carnes, G. W. Stone, R. Stephens, J. C. Waithman, W. R. Etches, F. H. Looney, R. W. Hogg, J. Hughston, W. A. Shann, N. Grellier, D. Johnston, J. W. Turner, T. Warner, and W. C. Blackham.

The undermentioned temporary Honorary Lieutenants to to be temporary Honorary Captains:—E. H. Hicks, whilst serving with the British Red Cross Society in France, and F. W. Hamilton, whilst serving with No. 2 British Red Cross Hospital.

Lieutenant A. B. Brook, from Seaforth Highlanders (T.F.), to be temporary Lieutenant.

Lieutenant H. B. Shillingford relinquishes his commission.

The undermentioned temporary Lieutenants relinquish their commissions: E. Fryer, H. G. L. Gilchrist, R. Moore, W. C. P. Barrett, D. Stewart, and A. Turnbull.

Canadian Army Medical Corps: Lieutenant-Colonel W. A. Scott to be temporary Colonel. Captain W. D. Howell to be temporary Major. J. N. Richards to be temporary Captain. F. W. Sawdon to be temporary Honorary Captain. To be temporary Lieutenants: Captain H. B. Maxwell, Lieutenants C. E. A. Trow, G. Stewart, L. B. W. Braine, T. W. F. MacKnight, E. C. A. Reynolds, R. A. McKay, J. E. O'Donnell, D. L. MacKenna, H. G. Joyce, and G. F. Nelson, Temporary Honorary Lieutenants A. T. Edwards, S. W. Burrell, E. J. Dyke, E. G. Saunders, J. Neligan, A. C. Pickett, D. J. Jackson, J. A. Vlasto, J. J. Walshe, W. Patey, J. E. Ashby, J. H. Lechler, W. A. Steen, F. E. Feilden, V. J. P. Clifford, W. S. Allan, W. H. W. C. Carden, A. Buchanan, G. A. Francis, H. C. Terry, S. H. L. Archer, A. F. Seacome, G. J. Adams, C. Dundee, E. H. Alton, S. Pool, K. Black, and A. Beeley. To be Temporary Honorary Lieutenants: P. E. D. Pank, G. P. B. Huddy, and T. D. Morgan.

INDIAN MEDICAL SERVICE.

The King has approved the promotions of the following officers of the Indian Medical Service:—

Majors to be Lieutenant-Colonels: C. R. Bakhle, K. V. Kukday, C. D. Dawes, T. H. Symons, H. J. Walton, H. Ainsworth, F. A. Smith, J. W. Cornwall, A. Miller, F. A. L. Hammond, H. R. Brown, S. P. James, A. N. Fleming, P. Dee, and F. O. N. Mell.

Captains to be Majors: W. F. Brayne, M. S. Irani, H. Watts, S. W. Jones, (Brevet Major) W. T. McCowen, J. Anderson, E. A. Roberts, and G. G. Hirst.

The King has approved the grant of the temporary rank of Lieutenant to the undermentioned:—A. MacInnes Ramsay, V. M. Kanal, M. L. Dhawan, B. S. Dhondy, Y. V. Khrishnamoorthy, Balkrishna, S. K. Engineer, K. P. Panikkar, J. Sircar, and M. Subramanyam.

SPECIAL RESERVE OF OFFICERS.

Royal Army Medical Corps.

The undermentioned Lieutenants to be Captains:—P. B. Corbett, W. W. Blair, W. W. S. Sharpe, M. J. Graham, P. W. Edwards, and W. H. A. D. Sutton.

A. A. Dear to be Lieutenant (on probation).

TERRITORIAL FORCE.

Army Medical Services.

Lieutenant-Colonel H. H. C. Dent, from North Midland Casualty Clearing Station to A.D.M.S., North Midland Division, with the temporary rank of Colonel.

Royal Army Medical Corps.

West Riding Field Ambulance: Lieutenant C. S. Brown to be Captain.

Highland Divisional Sanitary Section: Lieutenant A. F. MacBean to be Captain.

East Lancashire Casualty Clearing Station: The undermentioned Lieutenants to be Captains: W. Briggs, J. Ramsay, and T. W. Leighton.

North Midland Casualty Clearing Station: Lieutenant-Colonel H. H. C. Dent, from North Midland Field Ambulance, to be Lieutenant-Colonel.

South-Western Mounted Brigade Field Ambulance: Captain L. H. Hay resigns his commission.

London Field Ambulance: Captain N. C. Rutherford, from London Field Ambulance, to be temporary Major.

Lowland Field Ambulance: Lieutenant J. Angus to be Captain.

Eastern General Hospital: Captain O. Inchley relinquishes his commission on account of ill-health.

London Sanitary Company: The undermentioned Lieutenants to be Captains: W. Buddin and E. W. Gregory.

Home Counties Casualty Clearing Station: Captain W. Scarisbrick, from London Field Ambulance, to be Captain. Alexander Wilson to be Lieutenant.

East Lancashire Field Ambulance: Major (temporary Lieutenant-Colonel) W. L. Bentley relinquishes his temporary rank on ceasing to command a Field Ambulance.

Attached to Units other than Medical Units.—T. L. Fennell (late Major, Cheshire Regiment) to be Major. Lieutenants to be Captains: W. H. Buckley and F. R. H. Laverick. J. R. Bulman to be Lieutenant. Lieutenant P. A. Chillcott relinquishes his commission on account of ill-health.

JOURNAL OF THE ROYAL ARMY MEDICAL CORPS.

The April issue of this journal gives first place to a report on the Protozoological Findings in 556 Cases of Intestinal Disorder from the Eastern Mediterranean War Area, by Temporary Lieutenant-Colonel C. M. Wenyon, who last year undertook the examination for protozoal infection of a series of cases which had been invalided from Gallipoli for dysentery or other intestinal diseases. The report is in the nature of a preliminary communication, but Colonel Wenyon hopes that it will enable others who are doing similar work to make a comparison with the results they are obtaining elsewhere. This is followed by an account of a search for typhoid carriers among 800 convalescents by Captain A. Stokes and Lieutenant C. Clarke.[1] Lieutenant W. Wallace describes the methods of examining the vision of recruits and soldiers, with special reference to assumed and real defects; Captain J. W. McNee and Lieutenant Arnold Renshaw, who had the clinical assistance of Captain E. H. Brunt, have a joint paper on "Trench Fever," to which is attached a note by Colonel Sir Wilmot Herringham; and Hon. and Temporary Lieutenant-Colonel Sir John Collie writes on Neurasthenia: What it Costs the State.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

IN the 96 large English and Welsh towns 8304 births and 5657 deaths were registered during the week ended Saturday, April 29th. The annual rate of mortality in these towns, which had been 17·7, 17·4, and 16·4 per 1000 in the three preceding weeks, rose to 17·0 per 1000 in the week under notice. During the first four weeks of the current quarter the mean annual death-rate in these towns averaged 17·1, against 17·2 per 1000 in London. During the week the death-rate ranged from 8·4 in Ilford, 8·7 in Southport, 9·7 in Rhondda, 10·2 in Ealing and in Southend-on-Sea, and 10·8 in Dewsbury, to 22·4 in Stoke-on-Trent, 22·6 in Dudley, 22·8 in Burnley, 23·4 in Darlington, and 26·7 in Sunderland.

The 5657 deaths from all causes were 222 in excess of the number recorded in the previous week, and included 431, which were referred to the principal epidemic diseases, against 452 and 416 in the two preceding weeks. Of these 431 deaths, 175 resulted from whooping-cough, 119 from measles, 60 from infantile diarrhœal diseases, 46 from diphtheria, 24 from scarlet fever, and 7 from enteric fever, but not one from small-pox. The annual death-rate from these diseases was equal to 1·3 per 1000, and coincided with that recorded in the previous week. The deaths attributed to whooping-cough, which had been 141, 182, and 146 in the three preceding weeks, rose to 175, and caused the highest annual death-rates of 2·1 in West Ham, 2·2 in Smethwick and in Oldham, 2·7 in Acton, and 3·5 in Darlington. The deaths referred to measles, which had been 121, 120, and 121 in the three preceding weeks, numbered 119; the highest death-rates from this cause were 2·1 in Dudley, 2·7 in Stockton-on-Tees, and 3·2 in Stoke-on-Trent. The fatal cases of diarrhœa and enteritis (among infants under 2 years), which had been 50, 57, and 66 in the three preceding weeks, fell to 60, and included 19 in London, 6 in Manchester, 5 in Birmingham, and 3 in Stoke-on-Trent. The deaths attributed to diphtheria, which had been 45, 65, and 57 in the three preceding weeks, fell to 46, of which 9 were registered in London, 4 in Portsmouth, and 3 each in Stoke-on-Trent and Leeds. The deaths referred to scarlet fever, which had been 15, 16, and 22 in the three preceding weeks, further rose to 24, and included 5 in London, 3 each in Stoke-on-Trent and Liverpool, and 2 in St. Helens. The fatal cases of enteric fever, which had been 8, 12, and 4 in the three preceding weeks, rose to 7, but showed no excess in any town.

The number of scarlet fever patients under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, which had been 1778, 1717, and 1679 at the end of the three preceding weeks, further fell to 1643 on April 29th; 179 new cases were admitted during the week, against 252, 163, and 191 in the three preceding weeks. These hospitals also contained on the date mentioned 1338 cases of diphtheria, 230 of whooping-cough, 174 of measles, and 40 of

[1] THE LANCET, March 11th, 1916, p. 598.

enteric fever, but not one of small-pox. The 1455 deaths from all causes in London were 132 in excess of the number in the previous week, and corresponded to an annual death-rate of 17·6 per 1000. The deaths referred to diseases of the respiratory system, which had declined from 405 to 314 in the six preceding weeks, further fell to 295 in the week under notice.

Of the 5657 deaths from all causes in the 96 towns, 198 resulted from violence, 400 were the subject of coroners' inquests, and 1671 occurred in public institutions. The causes of 49, or 0·9 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest. All the causes of death were duly certified in Leeds, Bristol, West Ham, Bradford, Hull, and in 69 other smaller towns. Of the 49 uncertified causes, 10 each were registered in Birmingham and Liverpool, 4 in Gateshead, 3 each in Stoke-on-Trent and Manchester, and 2 each in Leicester and Sunderland.

HEALTH OF SCOTCH TOWNS.

In the 16 largest Scotch towns with an aggregate population estimated at 2,372,000 persons at the middle of this year, 1249 births and 791 deaths were registered during the week ended Saturday, April 29th. The annual rate of mortality, which had been 20·5, 17·6, and 17·4 per 1000 in the three preceding weeks, was again 17·4 per 1000 in the week under notice. During the first four weeks of the current quarter the mean annual death-rate in these towns averaged 18·2, or 1·1 per 1000 above that recorded in the large English towns. Among the several towns the death-rate during the week ranged from 8·9 in Kirkcaldy, 10·3 in Coatbridge, and 10·7 in Falkirk, to 20·6 in Clydebank, 21·1 in Dundee, and 28·7 in Perth.

The 791 deaths from all causes were equal to the number in the previous week, and included 65 which were referred to the principal epidemic diseases, against numbers declining from 96 to 67 in the four preceding weeks. Of these 65 deaths, 28 resulted from measles, 11 each from whooping-cough and infantile diarrhœal diseases, 10 from scarlet fever, 4 from diphtheria, and 1 from enteric fever, but not one from small-pox. The annual death-rate from these diseases was equal to 1·4, against 1·3 per 1000 in the large English towns. The deaths attributed to measles, which had been 36, 42, and 31 in the three preceding weeks, further fell to 28, and included 17 in Glasgow and 2 each in Edinburgh, Paisley, and Greenock. The deaths referred to whooping-cough, which had been 10, 4, and 14 in the three preceding weeks, fell to 11, and comprised 8 in Glasgow and 3 in Aberdeen. The fatal cases of diarrhœa and enteritis (among infants under 2 years), which had been 8, 13, and 9 in the three preceding weeks, rose to 11, of which 5 occurred in Glasgow and 2 in Dundee. The deaths attributed to scarlet fever, which had been 14, 8, and 5 in the three preceding weeks, rose to 10, and included 3 each in Glasgow and Paisley. The 4 deaths from diphtheria, of which 2 were registered in Paisley, were 3 below the average in the earlier weeks of the quarter. The fatal case of enteric fever was recorded in Aberdeen.

The deaths referred to diseases of the respiratory system, which had been 193, 167, and 168 in the three preceding weeks, fell to 159 in the week under notice, but were 6 in excess of the number registered in the corresponding week of last year. The deaths from violence numbered 26, against 23 and 24 in the two preceding weeks.

GUY'S HOSPITAL.—The following entrance scholarships in dental mechanics have been awarded:—Open scholarship, A. F. Bartle (£20); Pupils' scholarship, R. S. Roche (£20).

KING EDWARD VII. SANATORIUM, MIDHURST.—The annual report of this institution for the year July, 1914, to July, 1915, has reached us, and shows a record of good work. Seventy beds were set apart for the reception of soldiers suffering from tuberculosis, but in June, 1915, the National Insurance Commissioners having become responsible for the care of the consumptive soldier, the arrangements between the sanatorium and the War Office came to an end. During the year 352 patients were discharged, of whom 258 were civilians and 94 officers, non-commissioned officers, and men from various branches of H.M. forces. Among patients in whom the diagnosis of pulmonary tuberculosis was confirmed by the detection of bacilli in the sputum, 232 in all, the disease was arrested in 31 cases. The condition was much improved in 103 cases, improved in 33, remained stationary or became worse in 63, while 2 died. Among War Office patients in a similar category, 78 in all, the condition was arrested in 4 cases, much improved in 35, improved in 21, remained stationary or became worse in 15, and 3 died. Owing to the first assistant medical officer and the pathologist having joined the Royal Army Medical Corps, the research work of the laboratory has been suspended temporarily, though provision has been made for the examination of sputum and for the carrying out of other clinical methods.

Correspondence.

"Audi alteram partem."

THE USE OF THE TOURNIQUET:

A PLEA FOR ITS MORE THOROUGH USE IN PEACE AND WAR.

To the Editor of THE LANCET.

SIR,—I believe that if the full value of the tourniquet were properly appreciated it would be far more commonly and thoroughly used, especially in dealing with the wounded who are already suffering from loss of blood. These patients are badly affected by further bleeding. Sir George Makins, with his large experience, makes this point very clear[1]: "The loss of blood which accompanies the receipt of the injury is often very considerable; and although it may not immediately endanger the patient's life seriously, or call for surgical intervention to prevent its recurrence, yet the resulting anæmia is often persistent for some time, and may heavily handicap the patient's chances should a secondary operation become necessary. It has, indeed, much surprised me to see patients die a few hours after an operation in which, although a considerable amount of blood has been lost during the procedure, yet the patient has left the table in sufficiently good condition for no great anxiety to have been felt regarding his ultimate recovery. I believe this to be a definite sequence of the primary loss of blood, and it is a moment to be fully considered should the question of the performance of any operation likely to entail loss of blood arise."

The risks of sepsis and other complications are also increased by hæmorrhage. For these reasons it is especially important for us to do all we possibly can to prevent further bleeding. How are we to do this? By adopting a plan which I have found very valuable for many years in civil practice.

(A) For all operations upon the limbs a tourniquet is used and is not removed until the dressings are firmly applied.

(B) For all other operations: (*a*) The main artery or arteries are temporarily clamped or tied at the beginning of the operation whenever possible. Failing this (*b*) the small vessels are clamped before instead of after division.

(A) 1. After the limb has been well raised for several minutes to diminish the amount of blood in it, a good flat tourniquet is very tightly applied over lint around the limb well above the field of operation. The tourniquet must be very tight and have a reliable catch, for an imperfectly applied tourniquet obstructs the veins but not the arteries, and therefore increases the congestion of the limb and may cause severe bleeding. When the tourniquet is applied only a few drops of blood should escape, and a perfectly clear field is obtained for accurate work. No sponging is required, more perfect work can be done and much manipulation and time saved, and soaking of the tissues with blood prevented. Spread of infection in the septic military cases now so prevalent is thus rendered far less likely. Foreign bodies, like fragments of shell, can be far more easily and quickly found. The large vessels and nerves are easily recognised and avoided. Any large vessel that has to be divided—a rare event except in amputations—is tied. Shock is almost eliminated, for there is no loss of blood, and manipulations are reduced to a minimum. Very little anæsthetic is required, for the time of the operation is much shortened and the conduction of painful impulses to the spinal cord is diminished by the tourniquet. 2. At this stage most surgeons remove the tourniquet so that they may see and tie the bleeding points, but this step is unnecessary and wasteful of both blood and time; moreover, it adds to the risk of spreading sepsis already existing. When the main work of the operation has been done all dead spaces are carefully obliterated by catgut sutures so that no bleeding or effusion may take place into these spaces. Then the wound is completely closed in all aseptic cases, but in septic cases the wound is not completely closed, a gap about an inch long being left for drainage, but no gauze or tube is inserted except when the wound is deep and it is impossible to obliterate the cavity. 3. The skin is painted with tincture of iodine and aseptic gauze is applied, and the limb is surrounded by a large amount of aseptic cotton-wool. Bandages are then firmly applied to exert elastic pressure at, above, and below

[1] British Journal of Surgery, January, 1916.

the wound. Massive dressings must be used and the bandaging carefully done in order to exert the proper amount of pressure without causing pain. The bandaging must be completed before the tourniquet is removed, for the object is to exert the elastic pressure before the circulation is restored. On the principle of the Bramah press, a moderate amount of pressure serves to prevent bleeding into the wound if it is applied first, whereas an enormous pressure may be of no avail when a pool of blood has been allowed to form in the recesses of the wound. It may be remembered that in the Bramah press hydrostatic pressure is exerted through a small pipe to the bottom of a wide cylinder. The lifting power of the water in the cylinder is enormously greater than that in the feeding pipe. The same is true of the small arteries and the pool of blood in a wound when the dressing is not applied until the tourniquet has been removed. That this is not a mere theory is shown by the results. Rarely is there any appreciable bleeding and very rarely is there sufficient to soak through the dressings, and this is almost limited to extensive wounds requiring drainage. Even in these cases the loss of blood is comparatively trivial. It has been suggested that in the septic wounds of military practice this method adds to the danger of spreading sepsis. My experience is distinctly the other way. When the patient is returned to bed the limb is moderately elevated, for this diminishes pain and bleeding and prevents swelling of the terminal parts of the limb, which may otherwise be noticed as a result of firm bandaging. For clean cases I have used this method with the most satisfactory results for many years, having gradually put it to the test with more and more severe operations until at last I used it with the greatest confidence in cases of extensive resection of bone for the correction of severe talipes. Later, being much impressed with the detrimental effect of the severe loss of blood involved in the operations for acute infective osteomyelitis and for sequestrotomy, and during this war, I have tentatively extended the method to the septic wounds now so common, and with very satisfactory results. Therefore I have every confidence in recommending it, and I believe its adoption may lead to the saving of many lives, and also promote the more rapid and perfect healing of wounds.

(B) 1. Every surgeon is familiar with the great value of preliminary ligation of the lingual arteries in resection of the tongue. Similarly for removal of glands in the neck Crile's method of temporary clamping of the main vessels at the root of the neck is of the greatest value, making extensive operations more easy, radical, and expeditious to the great advantage of the patient. The principle can be safely extended to the military surgery of these parts. In the abdomen preliminary clamping or ligation is an established and beneficent principle, as, for instance, in gastro-jejunostomy, partial gastrectomy, resection of the bowel for growth or injury, and operations on the kidney. By this method many abdominal operations which were regarded as impossible on account of bleeding have been made comparatively easy and safe. 2. In many cases clamping and ligation of the main vessels being impossible, other methods have to be used. In these cases the individual vessels to be divided should be secured before instead of after division whenever possible.—I am, Sir, yours faithfully,

R. P. ROWLANDS, M.S. Lond., F.R.C.S. Eng.,
Surgeon to Guy's Hospital; Captain, R.A.M.C. (T.).
Queen Anne-street, W., May 6th, 1916.

INSURANCE BENEFITS.

To the Editor of THE LANCET.

SIR,—In the "Parliamentary Intelligence" of THE LANCET of April 8th (p. 804) there is reported a question which the Rt. Hon. C. Stuart-Wortley, M.P., addressed to the National Health Insurance Commissioners with reference to the manner in which the Prudential Assurance Society administers sickness benefit to its members. The case which led to the question was that of a woman suffering from advanced heart disease and dropsy absolutely unfit for work. She was deprived of her sickness benefit after a medical referee sent by the Prudential Assurance Society had made a cursory examination *without notice to or consultation with the panel doctor.* This case was brought to the notice of the London Mendicity Society, who obtained a further medical examination by the Prudential Assurance Society and as a result the sickness benefit was resumed and the arrears paid up. Mr. Charles Roberts's answer to the question in the House of Commons in certain particulars is only partially correct, whilst in others he has been absolutely misinformed.

Perhaps it would be as well to state clearly from personal experience what happens when the Prudential Assurance Society suspects that one of its members is malingering. The member receives a written notice that either (*a*) the society's doctor will call on the next day (it is exceptional for a longer notice than 24 hours to be given), or (*b*) the member is required to attend at a stated place for examination. In some cases this may involve a whole day's travelling and a complicated railway journey. At the same time the doctor in attendance on the patient is, as a rule, but not always, notified that the examination is to take place. More often than not this notice only arrives on the day fixed for the examination. In some cases no hour is given for the consultation, and if the time is stated the medical referee usually does not keep to it. From my own experience I can definitely state that the examination is of the most cursory character—the average time is apparently about three minutes. In not a single case that I have come across (and there are many) has the medical referee had the benefit of hearing the patient's past medical history from his (or her) own medical attendant. As the result of this medical (!) examination the society has the power, and frequently exercises it, of suspending the member from further sickness benefit. Mr. Charles Roberts states that in these cases "the member is furnished with information as to the course which she may pursue if dissatisfied with the society's decision." I do not know of any case in which a member was provided with this information, but I know of many in which it was not done.

Now, if these are facts—and I can guarantee that they are—there is obviously something very wrong. Quite apart from the discourtesy shown to the medical attendant, such methods cannot provide the society with the requisite information for forming a correct judgment upon the case, and as for the wretched member, such treatment surely savours of the autocratic and brutal methods of the Hun. Unfortunately, I believe it to be a fact that the Commissioners have no power over the internal affairs of a society. Further, so great is the power that a society like the Prudential exercises, that very few Members of Parliament can be induced to take the matter up. If, then, any change is to be effected it must be by the concerted action of the medical profession, and I would suggest that as a start any medical man having a similar experience to mine should communicate the details to me as soon as possible. By tabulating a large number of cases we may be able to influence public opinion to such an extent that the society will be forced to take action. I myself know of one case where a patient who had been declared by the authorities at a well-known hospital to be in a serious state of consumption, was considered by the society's referee "fit to resume work," and was sent to work against the advice of the hospital authorities and her own medical attendant. And this after three minutes' examination. In another case an epileptic domestic servant was declared "fit for work," but, unfortunately for her, with her bad medical history, no one will employ her.—I am, Sir, yours faithfully,

W. JAMES SUSMAN,
Chairman of the Oxfordshire Panel and Local Medical Committee.
Henley-on-Thames, May 5th, 1916.

PNEUMOCOCCAL BRONCHITIS.

To the Editor of THE LANCET.

SIR,—Sir James Goodhart's interesting article on this subject appearing in your issue of April 29th raises important questions concerning the classification and diagnosis of pulmonary disease. The clinical picture presented by pneumococcal and tuberculous infections is often so similar that one does not know whether pulmonary disease should be classified from the bacteriological or clinical point of view. Dr. Michell Clarke[1] some time ago gave several cases where Friedländer's bacillus was the chief morbific agent in causing pulmonary lesions simulating tuberculous infection. In the course of 17 years of sanatorium work I have collected 23 cases where nothing but some forms of cocci were seen in the sputum, though they presented more or less classical symptoms of consumption. Besides, it is common experience that cases of pulmonary tuberculosis are accompanied with no sputum or, if present, the sputum contains no pathogenic organism. Fishberg calls such cases "abortive tuberculosis"

[1] Bristol Medico-Chirurgical Journal, March, 1914.

and Neisser "tuberculosoid." In fact, some of the cases with severest pulmonary symptoms are associated with streptococcal infection. So that, roughly speaking, we have to deal with three classes of pulmonary consumption: cases with clinical symptoms of consumption—(*a*) with tubercle bacilli in the expectoration; (*b*) with pneumococci, or Friedländer's bacilli, with or without staphylo- or strepto-cocci, &c.; (*c*) with no micro-organism whatever in the sputum. If we are to classify these cases according to bacteriology, are we sure that the examination of sputum gives an accurate representation of the process, morbid or otherwise, going on in the lungs? and what if both cocci and tubercle bacilli were present? If pathogenic bacteria of the respiratory tract are frequently the primary invaders of the lung tissue causing symptoms similar to those of pulmonary tuberculosis, why should such cases be called "bronchitis"? Would it not be better to restrict the name "pulmonary tuberculosis" to the first class and classify the second and third classes together as "phthisis"?

Again, I have notes of three more cases where cocci which were first seen all over the field were gradually replaced to some extent by tubercle bacilli. The frequent presence of pneumococci together with tubercle bacilli in the sputum raises another question—Is tubercle bacillus a separate biological or pathological entity, or is it but a phase in the life-history of some other organism? If, according to the investigations of Dr. M. C. W. Young[2] and others, cocci can be found to pass directly into bacteria on certain media, and acid-fast bacilli can arise from a sort of sporocyst, is it unreasonable to assume that there may be a close morphological relation between pneumococci and tubercle bacilli?

I am, Sir, yours faithfully,

Mendip Hills Sanatorium, Wells, May 8th, 1916. C. MUTHU.

A SIMPLE APPARATUS FOR IONIC MEDICATION OF THE URETHRA.

To the Editor of THE LANCET.

SIR,—Difficulty in obtaining the necessary apparatus about a year ago for this method of treatment caused me to devise the following which in my hands has answered so well, that as this form of treatment appears to be coming into more general use, and as also there still seems a difficulty in obtaining the apparatus, I am induced to publish this note.

Materials required are: (1) the primary battery; (2) a Junker's chloroform inhaler; (3) a piece of thin wire, preferably platinum, 4–6 inches long; (4) a small electrical terminal junction with two screws; (5) a length of rubber-tubing with stopcock; and (6) a rubber catheter. Heat a medium-sized needle to redness and pierce a number of holes for a length of 1 inch in the catheter, starting 1½ inches from the opening at the distal end of the catheter. One inch from the proximal end pierce the catheter diagonally with the wire and thread down the lumen, leaving about an inch projecting for attachment of the electric terminal. Reverse the bellows of the Junker so that pressure will drive air down the short tube, and attach tube with stopcock to other end. The solution I have used is a 2 per cent. solution of zinc sulphate. One ounce of this is placed in the inhaler and an equal amount of hot water. Pressure on the bellows is applied and the solution forced along the tube until it reaches the stopcock, which is then turned off. It is then stood in a basin of hot water to keep warm. Direct the patient to partly empty the bladder, then pass catheter until urine starts to flow, and then withdraw until flow ceases, when the holes in the catheter will be opposite the prostatic portion of the urethra. Join up the tube with stopcock to the catheter and raise the pressure till the patient's feelings tell him that the urethra is full of solution, and finally connect wire to battery lead. The bellows and stopcock between them enable any required pressure to be kept up, and, provided this is not excessive, I have found no need for any flange on the catheter to prevent fluid escaping from the end of the penis. This can easily be made, however, by piercing a rubber cork with a hot skewer and leaving for a couple of days to harden. The catheter is then threaded through the hole and the cork can be set at any required distance from the distal end of the catheter, thus acting as an indicator for any particular patient and allowing the holes in the catheter to be at once set in any required portion of the urethra.

I am, Sir, yours faithfully,

Sutton Court-road, Chiswick, W., May 8th, 1916. H. O. BUTLER.

[2] Brit. Med. Jour., Oct. 24th, 1914.

The War.

THE CASUALTY LIST.

THE following names of medical officers appear among the casualties announced since our last issue:—

Killed.

Lieutenant A. Booth, R.A.M.C., attached to the King's Own Scottish Borderers, graduated M.B., B.Ch. Oxon., in 1912, and was a medical officer at the Herts County Asylum before joining the R.A.M.C. in November, 1915.

Died.

Deputy-Surgeon-General C. J. Mansfield, R.N., M.V.O., graduated M.B., C.M. Aberd. in 1883, and M.D. in 1896.

Captain N. J. L. Yellowlees, Canadian Army Medical Corps.

Wounded.

Major P. Sampson, D.S.O., R.A.M.C.

Captain A. S. Plant, R.A.M.C., attached to the Royal Field Artillery.

Captain O. L. V. de Wesselow, R.A.M.C., attached to the Worcestershire Regiment.

THE DUBLIN REVOLT.

The following casualties amongst medical officers are reported:—

Wounded.

Lieutenant H. L. Mooney, R.A.M.C.

Captain J. T. McCullagh, R.A.M.C. (a correction for Captain *W. MoK. H.* McCullagh, R.A.M.C., reported wounded in our last issue).

Captain G. F. Denning, R.A.M.C.

DEATHS AMONG THE SONS OF MEDICAL MEN.

The following sons of medical men must be added to our lists of those who have fallen during the war:—

Lieutenant-Colonel W. F. Bourne, Indian Army, eldest son of the late Dr. W. Bourne, of Cheltenham.

Captain R. K. MacGregor, R.A.M.C., only son of Dr. R. D. MacGregor, of Clerkenwell, London.

Lieutenant W. H. Wyatt, East Yorkshire Regiment, only son of the late Dr. W. T. Wyatt, of Stoke Newington, London.

Second Lieutenant N. H. Collins, Royal Inniskilling Fusiliers, only son of Dr. J. V. Collins, of Laghey, co. Donegal.

MENTIONED IN DESPATCHES.

The names of the following medical officers are to be added to the names published in THE LANCET of Feb. 5th, 1916, in connexion with Sir Ian Hamilton's despatch of Dec. 11th, 1915, concerning the operations in Gallipoli:—

Army Medical Service.—Surg.-Gen. W. Babtie, V.C., C.B., C.M.G.; Col. C. A. Ballance, M.V.O.; Col. F. D. Bird, Col. A. E. Garrod, F.R.S.; Col. Sir V. A. H. Horsley, F.R.S.; Col. W. Hunter, Col. V. W. Low, Col. A. W. M. Robson, C.V.O.; Col. C. S. Ryan; Col. J. P. Stewart, Col. C. J. Symonds, Col. F. M. Sandwith, Col. W. Thorburn, Col. A. H. Tubby, and Col. W. H Willcox.

Royal Army Medical Corps.—Maj. J. G. Bell and Lieut. W. N. Rishworth.

Royal Army Medical Corps (T.F.).—Lt.-Col. E. V. Gostling and Maj. (temp. Lt.-Col.) C. H. Lindsay.

Canadian Army Medical Corps.—Lt.-Col. F. Etherington, Lt.-Col. S. H. McKee, and Maj. E. G. Davis.

General Sir John Nixon, K.C.B., in a despatch dealing with the operations in Mesopotamia in October, November, and December, 1915, says:—

Major W. C. Croly, R.A.M.C., has been in medical charge of the Staff at General Headquarters, and has shown himself always the right man in the right place, and to have taken the keenest interest in his work and care of those whom he had in charge. The medical services have had to face very trying and unusual conditions. On more than one occasion the number and severity of the casualties have thrown the greatest strain on them, but the organisation and efficiency of the arrangements have ensured as speedy an evacuation of the wounded as the means placed at their disposal permitted. In this connexion I wish to bring forward the name of Surgeon-General H. G. Hathaway. The British General Hospital has throughout been in charge of Lieutenant-Colonel D. J.

Collins, Royal Army Medical Corps, whose zeal, energy, and organising power have rendered it a model hospital of its kind. Credit is also due to Lieutenant-Colonel G. B. Irvine, Indian Medical Service, for his devoted and careful supervision of the Indian General Hospital.

Captain W. H. Hamilton, I.M.S., is also mentioned for having rendered good service.

OBITUARY OF THE WAR.

CYRIL JAMES MANSFIELD, M.V.O., M.D. ABERD.,
DEPUTY SURGEON-GENERAL, ROYAL NAVY.

AFTER an illness of four weeks—suppurating cervical glands followed by septicæmia—Deputy Surgeon-General Mansfield died on May 7th at Haslar, where he had worked as senior medical officer of the medical section since July of last year. Born on June 19th, 1861, he was the youngest and only surviving son of the late Rev. Edward Mansfield, vicar of Highnam, Glos., and was a descendant of the well-known Chief Justice of Common Pleas and a relation of Lord Sandhurst. He was educated at Cheltenham, qualified M.B., C.M. at Aberdeen in 1883, and proceeded to M.D. in 1896. Entering the Royal Navy in 1885, he subsequently had an extensive experience in the cadet and boys' training establishments of the Royal Navy, having been surgeon in the old *Britannia* (1892–3), fleet-surgeon at the Royal Naval College, Osborne (1905–9), while the present Prince of Wales was in residence, and in H.M.S. *Impregnable* (1911–13). After the last appointment he was deputy surgeon-general at the Royal Naval Barracks, Chatham (1914–15). A hard-working officer, he was most unselfish and kindly to patients and colleagues alike, and was therefore universally respected and beloved. He was created M.V.O. in 1909. The naval funeral took place at Haslar on May 10th.



PHILIP DOBSON PICKLES, L.M.S.S.A.,
SURGEON, R.N.V.R.

Surgeon P. D. Pickles, who died in the Malta Naval Hospital on April 28th after being rescued from H.M.S. *Russell*, mined in the Mediterranean, was the eldest son of John J. Pickles, surgeon, of Camp-road, Leeds. He was educated at the Leeds Grammar School and Leeds University and qualified in 1908. After holding the post of resident physician at the General Infirmary at Leeds for six months he took a ship surgeoncy to India, and finally settled down in practice at Earby, near Skipton. Joining the Royal Naval Volunteer Reserve early in 1914, he was present at the Naval Review at Spithead in July that year, and on the outbreak of the war he was recalled to his ship, and served on her until the disaster occurred, when he was overcome by the fumes and removed to hospital. Surgeon Pickles was 33 years of of age and unmarried. He had four brothers in the services, three of whom are medical officers.



SOCIETY OF MEMBERS OF THE ROYAL COLLEGE OF SURGEONS OF ENGLAND AND THE SUPPLY OF MEDICAL OFFICERS FOR THE SERVICES.

Dr. Sidney C. Lawrence, honorary secretary of the Society of Members of the Royal College of Surgeons of England, writes to us as follows:—

I am instructed to forward you for publication in your paper a copy of a letter addressed on behalf of this Society to the Royal College of Surgeons of England and the Conjoint Advisory Committee of that College, and the Royal College of Physicians of London.

[COPY.]

To the Secretary, Royal College of Surgeons of England.

SIR,—At a recent meeting of the Council of this Society a resolution as under was passed unanimously, and I was instructed to acquaint you with the same in order that it may be brought to the notice of your Council and of the Advisory Committee of the English Royal Colleges of Physicians and Surgeons:—

"That this Society is strongly of opinion that the paid services of medical men over military age should be more utilised for whole- or part-time duty at home barracks, civil and military hospitals, &c., so as to free younger men for active service abroad; that where medical men, ineligible for war duties, could not be found for out-patient departments of civil hospitals, or tuberculosis or school medical work, such departments should be at once closed for the duration of the war; that the Government should withhold their approval of the appointment of men of military age to vacancies arising in the Poor-law or Public Health Services or in any public appointment until the conclusion of the war, and that in every case such appointments be only made for the duration of the war or until six months after the conclusion of peace, as under present conditions fair competition for such posts is impossible and shirkers are thereby unduly favoured."

Yours faithfully,

SIDNEY C. LAWRENCE.

THE WITTENBERG CAMP.

At its quarterly meeting on May 2nd the Royal College of Physicians of Edinburgh resolved to offer its Diploma of Membership to Major Harold Edgar Priestley, Captain Alan Cunliffe Vidal, and Captain James Lafayette Lauder, in appreciation of their conduct as physicians at Wittenberg.

THE ALLIES' HOSPITAL AT YVETOT.—The report of the Allies' Hospital which has been carried on since November, 1914, in disused buildings of a large monastic boys' school at Yvetot, states that up to Dec. 31st, 1915, 1380 patients received treatment. The number of deaths has been 16, including four who were in a hopeless state on admission. The average total cost per patient treated has been £7 9*s.* 3*d.*; the catering bill was fr.1.50 per day per head. The French orderlies, cooks, &c., and the clerical office staff receive a nominal salary, but the British staff is an honorary one. There are some 300 beds available. The buildings were lent by the French Government. The renovation and equipment as a hospital, however, required an outlay of £5634, and in order to defray these initial expenses and to ensure continual financial support the Allies' Benevolent Society was established and registered under the Friendly Societies' Acts for the sole purpose of administering and financing the institution. Dr. and Mrs. F. S. Pearson, who were among the unfortunate victims in the *Lusitania* disaster, rendered invaluable service in founding the society. Dr. Fitch, of Rochester, U.S.A., gave his professional services for several months and made a handsome donation of £800.

UNION JACK CLUB EXTENSION.—Mr. H. G. Morgan has undertaken, with the approval of the First Lord of the Admiralty and the Secretary of State for War, the organisation of an extension fund for the Union Jack Club. All civilians owe a debt of gratitude to the fighting forces, and there ought to be a generous response to the appeal on behalf of a club which does such good work for our sailors and soldiers. Contributions should be sent to the honorary treasurer, Union Jack Club, Waterloo-road, S.E., or to Messrs. Coutts and Co., 440, Strand, W.C. Offers of service should be addressed to Mr. Morgan at the Club.

Obituary.

THOMAS COLCOTT FOX, M.B. LOND., F.R.C.P. LOND., M.R.C.S. ENG.,

LATE PHYSICIAN FOR DISEASES OF THE SKIN, WESTMINSTER HOSPITAL, ETC.

Dr. T. Colcott Fox, who died on April 11th, at the age of 67, was the son of Dr. L. O. Fox, of Broughton, Hants. He received his early education at University College School, and afterwards went to Cambridge as a natural science scholar at Peterhouse. After graduating in arts at Cambridge, he returned to University College to study medicine. In 1876 he obtained the M.R.C.S. Eng. and graduated M.B. at the University of London. In 1883 he obtained the M.R.C.P. Lond., and was elected a Fellow of the College in 1892. Among his early appointments was that of medical superintendent of the Fulham Small-pox Hospital; he afterwards became physician for diseases of the skin at Westminster Hospital, and visiting dermatologist to the ringworm schools of the Metropolitan Asylums Board. He had also held the posts of physician to the Victoria Hospital for Children and to the St. George and St. James's Dispensary, and was consulting physician to the skin department of the Paddington Green Children's Hospital. Conjointly with his brother, Dr. Tilbury Fox, he was the author of an "Epitome of Skin Diseases," and also contributed largely to medical literature on dermatology.

Dr. H. G. Adamson writes as follows:—

It was my good fortune to have been associated with the late Dr. Colcott Fox as his assistant in hospital work during several years, and to have thus had the benefit of his teaching and example. Many of those who now practise dermatology in London have been similarly pupils of Dr. Fox; and none can have worked with him without being in some degree infected by his enthusiasm, without gaining much from the example of his accuracy in clinical observation, without gleaning something from his vast store of knowledge of the literature of diseases of the skin, and without being stimulated by his kindly advice and criticism. Dr. Colcott Fox regarded himself as one who wrote little, but while he was no prodigal writer he actually contributed very largely to the literature of dermatology. His contributions were often brief, for the reason that he was careful always that every fact and statement should be as nearly as possible scientifically accurate. Several complaints with which we are now familiar were first observed and noted by him, and he helped very largely to sift out and to establish the identity of a good many more. Among the diseases with which the name of Colcott Fox will always be associated are the now well-known papular urticaria of childhood—lichen urticatus; a vacciniform dermatitis of babies; "ringed eruption," now known as granuloma annulare; dermatitis fictu of neurotic women and of malingerers; and the whole group of tuberculides. He was an authority on drug eruptions, and edited and contributed valuable notes to Morrow's monograph on this subject. In more recent years he carried out a large amount of research work in connexion with the biology of ringworm, and a few years before he retired from practice he wrote for Allbutt and Rolleston's "System of Medicine" articles upon the eruptions of staphylococcic and of streptococcic origin, pityriasis, botryomycosis, urticaria, angioneurotic œdema, urticaria pigmentosa, lichen urticatus, erythema, granuloma annulare, prurigo, Schamberg's disease, pemphigus and the pemphigoids, epidemolysis bullosa, and mycosis fungoides. Each of these articles is a monograph stamped with his characteristic thoroughness, and embodying his own particular views and his extensive knowledge of literature of the particular subject dealt with. Throughout his career it was the hobby of our late beloved master to gather together the numerous monographs upon the diseases which he made his life's study, and he left as a legacy to future dermatologists his unique and invaluable collection which is now in the library of the Royal Society of Medicine, and which bears upon its volumes the following inscription: "In Usum Amicorum et Fratrum Hunc Librum D.D. Thomas Colcott Fox, M.D. MCMXIII."

We are indebted to Dr. J. J. Pringle for the following appreciation of Dr. Colcott Fox, who was certainly one of the ablest dermatologists that the English schools have produced:—

I trust that I may be permitted to add some remarks to your obituary notice of my friend Colcott Fox. His work, being almost exclusively dermatological, was consequently duly appreciated only by fellow workers in the same branch of medicine. But both at home and abroad his conspicuous merit received full recognition, and I can confidently say that he influenced British dermatology more powerfully than any of his contemporaries. Peculiarly graceful appreciation of this fact was acknowledged by Sir Malcolm Morris, when he yielded pride of place to him as President of the Dermatological Section of the Royal Society of Medicine in succession to the late Dr. Radcliffe Crocker. Almost all of our most prominent dermatologists of the present day must be included among his pupils and came under the spell of his enthusiasm; their devotion to him was justifiably great and by them his teaching will be handed down to posterity. Colcott Fox's name is not associated with any startling discovery or linked on to any special disease; he wrote no popular text-book; he was too conscientious to condescend to the perpetration of professional "pot-boilers." But he traversed and illuminated the whole length and breadth of the dermatological field, and touched no subject without adorning it. His consummate mastery of detail did not militate against his breadth of conception; he saw both the trees and the wood. I was associated with Colcott Fox for 15 years as co-secretary of the Dermatological Society of London, and during that time I learnt to appreciate his many qualities of heart and mind, his wonderful toleration of everything, except humbug, pretension, or crookedness, and the extraordinary depth and manysidedness of his knowledge. Had he cared to do so, he might have claimed priority of observation of many cutaneous conditions which have been accredited to others; but his almost overwhelming generosity constrained him from doing so. No more lovable man ever existed; his friends were many and true-hearted, and their deepest sympathy goes out to his mourning widow who guarded him and guided him with such exquisite solicitude and tenderness throughout the dark days of his failing years.

WHARTON P. HOOD, M.D. ST. AND., M.R.C.S., L.S.A.

Dr. Wharton Hood, who at his recent death was in his eighty-third year, was the son of Dr. Peter Hood, a well-known London practitioner. In 1855 he became a Member of the Royal College of Surgeons of England, and graduated as M.D. St. And. in 1862. He received his medical education at King's College, and was house physician to King's College Hospital. Later he became exceedingly well known as a surgeon for cases of sprain and joint injury.

The story of how Wharton Hood took up the class of practice with which his name is so well associated is curious. Hutton, a well-known bone-setter in the "sixties," was ill and was attended by Dr. Peter Hood. In return for his attendance Hutton offered to teach the son of Dr. Peter Hood his methods. On the advice, with certain qualifications, of Sir James Paget and Sir William Fergusson, Hood accepted the offer, watched Hutton's practice, and studied the manipulations of the bone-setter. On Hutton's death Dr. Wharton Hood published in THE LANCET a series of papers on Bone-Setting (So-called) which aroused great interest amongst the profession. Previous to 1871 Dr. Wharton Hood was in general practice with his father. On the issue of these papers various cases of injury were sent to him, and in consequence of a discussion on the question he began to attack the established practice of prolonged rest which was considered necessary in the treatment of the type of injuries which were coming under his care. Wharton Hood, in the late "seventies," adopted for recent injuries the treatment which is now common—that of massage and early movement in injuries to joints, and massage in fractures. Amongst some of the medical profession unjust views were held as to the ethical character of his methods. A friend of Wharton Hood, very intimately connected with him in his practice, has often stated that in the course of many years he never heard Wharton Hood criticise adversely the previous treatment in any case before him, even when attended by practitioners who held opposite views to himself, and some of the strictures applied to Hood must in these circumstances be described as outrageous. When Wharton Hood first took up the question of improving the treatment of stiff joints and allied conditions many practitioners might be said to have but a sketchy knowledge of the subject, and there is no doubt that when he retired from active practice he left his mark on surgery—some, indeed, would claim that he revolutionised the ordinary treatment in this class of case.

Hood amongst his intimate friends was known and appreciated because of his large and generous views of others' work, and his unfailing sympathy and kindness of heart. He was a fisherman and keen cricketer up to the time he was 50. He was a constant attendant at Lord's Cricket Ground, where many men of the staff have every reason to remember him. He was a remarkably good shot, and was generally interested in sport. He leaves one son and two married daughters.

Medical News.

UNIVERSITY OF CAMBRIDGE.—At the examination in Sanitary Science held recently the following candidates were successful in both parts of the examination:—

Satish Chandra Biswas, Kaikobad Temoolji Jungalwalla, Gulabrai Teckchand Makhijani, Gladys Montgomery, Charles Frederick Searle, and *Chik Hing Wan.

* Distinguished in Bacteriology.

EXAMINING BOARD IN ENGLAND BY THE ROYAL COLLEGES OF PHYSICIANS OF LONDON AND SURGEONS OF ENGLAND.—At the Final Examination, held from April 4th to 25th, the following candidates were successful in the subjects indicated below:—

Medicine.—A. M. Ahmad, Guy's; E. B. Alabaster, Birmingham; R. Aspinall-Stivala, Guy's; K. D. Atteridge, St. Bartholomew's; A. J. Bado, St. Thomas's; H. S. Baker, St. Bartholomew's; H. W. Barnes, King's College; H. J. Bensted, Guy's; W. H. Blackburn; Cambridge and St. Bartholomew's; D. C. Bluett, Cambridge and St. Thomas's; E. G. P. Bousfield, St. Bartholomew's; D. S. Brachman, Pennsylvania and St. Bartholomew's; H. G. Broadbridge, London; I. R. R. Brogden, Cambridge and Guy's; W. W. K. Brown, St. Thomas's; L. J. F. Bull, St. Bartholomew's; G. E. Burton, Cambridge and St. Bartholomew's; H. H. Castle and L. A. Célestin, St. Thomas's; Hetty Ethelberta Claremont, Royal Free; A. H. Clarke, St. Thomas's; W. H. Coldwell, Westminster; M. C. Cooper, London; J. M. Courtney, St. Mary's; W. M. Crombie, St. Thomas's; L. Cunningham, Cambridge and St. Bartholomew's; R. C. Davenport, St. Bartholomew's; A. F. R. Dove, Durham; A. B. Dummere, London; S. G. Dunn, St. Bartholomew's; A. W. F. Edmonds, Westminster; J. S. Ellis, Cambridge and Guy's; P. O. Ellison, St. Bartholomew's; H. S. Evans, Cambridge and St. Thomas's; L. W. Evans, St. Bartholomew's; T. S. Evans, Cardiff and St. Mary's; W. Farquharson, St. Mary's; H. W. Featherstone, Cambridge and Birmingham; F. O. Fehrsen and G. Fehrsen, London; H. A. Fiddian, Cambridge and St. Bartholomew's; A. A. Fitch, Liverpool; M. R. V. Ford, Sheffield; F. C. A. Frith, Bristol; W. V. Gabe and W. B. Gabriel, Middlesex; G. T. Garraway, University College; L. S. Gathergood, Cambridge and Guy's; Ava Louise Glasier, Manchester; G. A. Goolden, Cambridge and St. Thomas's; G. C. Hartley, Birmingham; A. N. Haworth, Charing Cross; N. N. Haysom, St. Bartholomew's; Mary Isabella Hounsfield, Royal Free; E. G. Howell, Cardiff and St. Thomas's; G. P. B. Huddy, London; Edith Caroline Hudgell, Royal Free; J. B. Hume, St. Bartholomew's; G. K. E. Inman, Sheffield; B. B. Jareja, Cambridge and St. Thomas's; Elizabeth Ethel Jenkins, Sheffield and Royal Free; J. R. John, Cardiff and Charing Cross; W. G. Johnston, St. Mary's; G. E. Kidman, Guy's; P. R. E. Kirby, University College; D. L. Lees, Bristol; N. M. Lewis and E. B. Lightwood, Westminster; Annie Lloyd, Royal Free; W. Marriott, St. Thomas's; F. C. Mason, Middlesex; F. Mohamed, Cairo and Westminster; H. W. L. Molesworth, London; E. C. de M. Morgan, Guy's; G. Moulson, St. Thomas's; F. Newey, Birmingham; F. P. Nicholas, Cambridge and St. George's; D. C. Norris, London; F. C. Ormerod, Manchester; Margaret Stuart Palmer, Royal Free; G. E. Paul, Madras and Middlesex; J. A. P. Perera, Ceylon and London; R. B. Price, Birmingham; J. S. Ranson, Westminster; R. Rau-Damodar, Madras and Middlesex; Eveleen Blanche Gibson Rivington, Royal Free; C. Y. Roberts, St. Thomas's; Violet Ione Russell, Royal Free; B. Sahai, Calcutta and Charing Cross; M. Schwartz, University College; J. A. D. Skinner, Cambridge and St. Thomas's; A. C. Smith, Birmingham; D. M. Smith, Bristol; J. F. Smith, St. Thomas's; R. J. Staley, Birmingham; D. Standing, Leeds and Birmingham; B. P. Stookey, Harvard; G. C. Swanson, Glasgow; D. G. C. Tasker, Bristol; J. P. R. Tennekoon, Ceylon and London; I. Tewfik, Cairo and Guy's; H. M. Wharry, Oxford and St. Bartholomew's; J. de S. Wijeyeratne, University College; G. B. Wild, Manchester; A. Williams-Walker, Birmingham; A. G. P. Wills, Cambridge and St. Thomas's; C. E. Wise, Lausanne and University College; R. A. Woodhouse, Cambridge and St. Mary's; and R. S. Woods, Cambridge and St. George's.

Surgery.—W. Agar, Birmingham; G. C. Agarwala, London; E. B. Alabaster, Birmingham; Hannah Katherine Alton, Royal Free; D. H. Anthony, St. Mary's; R. Aspinall-Stivala, Guy's; K. Atkin, Cambridge and Manchester; I. Aubrey, University College; J. Aydon, Cambridge and St. Bartholomew's; H. J. Bensted, Guy's; D. S. Brachman, Pennsylvania and St. Bartholomew's; J. P. Bracken, University College; I. R. R. Brogden, Cambridge and Guy's; C. P. L. Carrier, Charing Cross; A. S. Carter, Middlesex; H. H. Castle and L. A. Célestin, St. Thomas's; P. D. H. Chapman, Cambridge and Guy's; G. E. Chissell, Middlesex; Hester Mary Church and Mabel Campbell Clark, Royal Free; A. H. Clarke, St. Thomas's; P. S. Clarke, St. Bartholomew's; H. M. Cohen, Baltimore and St. Bartholomew's; W. H. Coldwell, Westminster; W. M. Crombie, St. Thomas's; Stephanie Patricia L. H. T. Daniel, Royal Free; R. C. Davenport, St. Bartholomew's; M. J. de Lemos, Bombay and King's College; F. P. G. de Smidt, London; A. F. R. Dove, Durham; S. G. Dunn, St. Bartholomew's; F. Dunphy, Westminster; M. Dwyer, Leeds and St. Thomas's; J. D. Dyson, Middlesex; W. F. Eberli, Cambridge and St. Bartholomew's; A. W. F. Edmonds, Westminster; D. D. Evans, Cambridge and St. Bartholomew's; G. I. Evans, Oxford and St. George's; H. S. Evans, Cambridge and St. Thomas's; H. W. Featherstone, Cambridge and Birmingham; S. W. Fisk, Middlesex; J. B. Flamer-Caldera, Ceylon and St. Bartholomew's; J. Fox-Russell, Middlesex; P. B. F. Frossard, London; A. R. Fuller, St. Mary's; D. H. A. Galbraith, Guy's; G. T. Garraway, University College; P. M. J. Van Gehuchten, Louvain and London; S. C. Ghose, Calcutta and St. Mary's; C. C. Goodall and F. H. S. Greenish, Cambridge and London; Ethne Haigh, Durham; J. C. N. Harris, Cambridge and St. Thomas's; S. F. Harris, London; J. M. Harrison, St. Thomas's; N. H. Harrison, Charing Cross; A. G. Harsant, London; N. N. Hayson, St. Bartholomew's; C. G. Hitchcock, London; C. E. Hopwood, Manchester; W. A. Hotson, Westminster; Mary Isabella Hounsfield, Royal Free; E. G. Howell, Cardiff and St. Thomas's; Edith Caroline Hudgell, Royal Free; S. Hutchinson, University College; T. H. Jackson, Charing Cross; B. E. Jerwood, Cambridge and Guy's; A. M. Jones, Charing Cross; T. Jones, Cambridge and Manchester; T. Joekes, Leyden and St. Bartholomew's; R. D. Kamdin, Bombay and Charing Cross; V. Kameneff, Moscow and University College; T. L. Kan, St. Thomas's; T. R. F. Kerby, Birmingham; A. D. Loganadan, Madras and London; R. P. Langford-Jones, University College; E. H. D. Lau, Durham; E. E. Lightwood, Westminster; Katharine Lloyd, Royal Free; H. B. Logan, Bristol and University College; P. G. McEvedy, Guy's; S. S. Malkani, Bombay and University College; P. S. Marshall, University College; F. C. Mason, Middlesex; Adeline Mabel Matland, Royal Free; B. H. Mellon, National University, Ireland; A. A. Miller, Heidelberg; H. W. L. Molesworth, London; T. D. Morgan, Cambridge and London; A. Morford, St. Bartholomew's; A. G. Morris, Bristol; G. Moulson, St. Thomas's; J. J. Murphy and S. Muttiah, London; R. L. Newell, Manchester; F. Newey, Birmingham; D. C. Norris, London; J. D. Oliver, Dublin and Middlesex; A. J. Orenstein, Jefferson; F. C. Ormerod, Manchester; P. E. D. Pank, Cambridge and London; G. E. Paul, Madras and Middlesex; E. S. Phillips, Guy's; J. W. G. Phillips, St. Mary's; R. R. Powell, Cambridge and St. Bartholomew's; R. H. C. Pryn, Guy's; J. N. Puri, London; H. M. Quackenbos, University College; C. R. Reckitt, London; T. H. Rhys, Cardiff and Charing Cross; Eveleen Blanche Gibson Rivington, Royal Free; P. G. Russell, Middlesex; Violet Ione Russell and Enid Eleanora Sanger-Davies, Royal Free; M. Schwartz, University College; J. A. D. Skinner, Cambridge and St. Thomas's; R. J. Staley, Birmingham; D. F. Standing, Leeds and Birmingham; W. Steadman, University College; B. P. Stookey, Harvard; G. C. Swanson, Glasgow; D. G. C. Tasker and R. H. Tasker, Bristol; H. W. Taylor, London; Lily Dorothea Taylor, Royal Free; H. Taylor, Liverpool; R. O. Towend, London; W. J. Vance, Guy's; H. C. Viehoff, Liverpool; H. S. Wacher, Guy's; G. B. Wild, Manchester; R. W. Willenberg, Ceylon and Middlesex; G. C. Williams, Cambridge and Bristol; A. Williams-Walker, Birmingham; W. E. Wilson, St. Bartholomew's; and C. E. Wise, Lausanne and University College.

Midwifery.—K. A. Anklesaria, Bombay and London; C. W. Armstrong Oxford and London; I. Aubrey, Cardiff and University College; J. R. Banks, University College; G. A. Beyers, St. Bartholomew's; Margaret Eliza Bjorkegren, Royal Free; W. H. Blackburn, Cambridge and St. Bartholomew's; L. G. Blackmore, Middlesex; C. J. L. Blair, St. Bartholomew's; J. N. L. Blamey, St. Thomas's; N. Bonard, Geneva; D. S. Brachman, Pennsylvania and St. Bartholomew's; C. V. Braimbridge, Cambridge and St. Bartholomew's; J. F. C. Braine, Guy's; G. E. Burton, Cambridge and St. Bartholomew's; C. P. L. Carrier, Charing Cross; P. D. H. Chapman, Cambridge and Guy's; Stella Churchill, Royal Free; W. J. Colborne, Charing Cross; P. N. Cook, St. Bartholomew's; W. T. Cooper, Charing Cross; J. M. Courtney, St. Mary's; W. Cramer, Edinburgh and University College; W. M. Crombie, St. Thomas's; W. S. Dawson, Oxford and St. Thomas's; G. Day, St. Bartholomew's; A. R. K. Dina, Bombay and Guy's; J. D. Dimock, Middlesex; W. C. C. Easton, Manchester; D. D. Evans, Cambridge and St. Bartholomew's; J. Fairbrother, Cambridge and London; A. A. Fitch, Liverpool; J. B. Flamer-Caldera, Ceylon and St. Bartholomew's; A. Girgis, London; E. O. Goldsmith, Cambridge and St. Bartholomew's; T. S. Greenaway, Westminster; J. R. Harris, Cambridge and St. Thomas's; J. F. Haynes, Oxford and St. Bartholomew's; N. S. Hewitt, Cambridge and London; E. B. Hickson, University College; Edith Caroline Hudgell, Royal Free; J. W. Hyatt, London; G. K. E. Inman, Sheffield; B. E. Jerwood, Cambridge and Guy's; D. B. S. Jones, Charing Cross; T. R. F. Kerby, Birmingham; G. E. Kidman, Guy's; R. T. Lewis, Cardiff and University College; Katharine Lloyd, Royal Free; K. A. I. Mackenzie, Oxford and St. Bartholomew's; K. Masson, Cambridge and St. Bartholomew's; T. E. Micklem, Oxford and Guy's; K. V. Muttukumaru, Madras and London; R. L. Newell, Manchester; F. Newey, Birmingham; A. J. Orenstein, Jefferson and London; E. S. Orme, Cambridge and St. Thomas's; F. C. Ormerod, Manchester; A. Orr-Ewing, Cambridge and St. Bartholomew's; A. Pastel, Paris and Charing Cross; W. D. Pearman, Birmingham and St. Mary's; M. Pearson, Guy's; V. J. E. C. del S. Perez y Marzan, University College; B. H. Pidcock, St. Bartholomew's; C. N. Ratcliffe, Liverpool; S. D. Rhind, St. George's; Eveleen Blanche Gibson Rivington, Royal Free; A. Rodd, University College; B. T. Rose, Birmingham; W. R. Rowlands, Liverpool; Violet Ione Russell, Enid Eleanora Sanger-Davies, and Elisabeth Henrietta Schwab, Royal Free; S. N. Scott, Charing Cross; F. N. Sidebotham, Cambridge and Guy's; H. H. Silley, University College; A. C. Smith, Birmingham; N. H. Smith, Cambridge and Liverpool; V. R. Smith, St. Mary's; N. A. Sprott, Oxford and St. Thomas's; H. G. Stormer, St. Thomas's; G. C. Swanson, Glasgow; G. B. Tarring, Oxford and Guy's; D. G. C. Tasker, Bristol; H. W. Taylor, London; I. Tewfik, Cairo and Guy's; O. S. Thompson, St. Thomas's; R. R. Traill, Cambridge and Guy's; M. B. M. Tweed, Guy's; R. C. P. Whitcombe, Cambridge and St. Thomas's; G. B. Wild, Manchester; G. C. Williams, Cambridge and Bristol; J. P. Williams, Cardiff and Westminster; T. P. Williams, Middlesex; A. Williams-Walker, Birmingham; C. E. Wise, Lausanne and University College; R. A. Woodhouse, Cambridge and St. Mary's; K. M. C. Woodruff, Guy's; and W. Yeoman, University College.

THE ONTARIO MEDICAL ASSOCIATION.—The thirty-sixth annual meeting of the Ontario Medical Association, of which Dr. H. B. Anderson is President, will be held at Toronto from May 31st to June 3rd. The meeting should be a notable one, as great efforts are being made to organise the profession in order that a firm position may be taken in regard to the many questions of professional and public interest which will come up for discussion, among them being the Workmen's Compensation Bill and the various matters which are being considered by the Commission on Medical Education. The address in Medicine will be

delivered by Dr. E. P. Joslin, of Boston, on the "Treatment of Diabetes"; the address in Surgery by Dr. de Wit Lewis, of Chicago; and the address in Gynæcology by Dr. J. F. Percy, of Salisbury, Ill. Arrangements have been made for a symposium on "The Rôle of the Nose, Mouth, Throat and Accessory Sinuses in relation to Systemic Disease." Dr. W. A. Price, D.D.S., Cleveland, will deal with mouth infections, illustrated by a kinematographic demonstration. "The Arthritides" will be taken by Dr. Joel Goldthwait, of Boston, and the "Nose, Throat, and Accessory Sinuses" by Dr. D. J. Gibb Wishart, Toronto; Professor Blackader, of Montreal, will deal with "Drugs and Medicinal Agents considered from the Professional, National, and Economic Standpoint"; Dr. Justus Matthews, of the Mayo Clinic, will give a paper on "Tonsillectomy with its General Results"; and Dr. Solomon Solis Cohen, of Philadelphia, will discuss the "Treatment of Pneumonia." An interesting feature of the meeting will be the discussions on "The Returned Solder's Problem from the Medical, Military, Vocational, and Economic Points of View." Professor Stephen Leacock, of McGill University, will address the meeting, and it is expected that there will be representatives of the various military convalescent hospitals throughout the dominion. An invitation has been extended to the Canadian Medical Association to hold its executive session in conjunction with the annual meeting, and it is hoped in this way to have a larger representation from the sister province than has been the custom in recent years. The medical officers of health will hold their annual convention on May 29th and 30th. Dr. F. Arnold Clarkson, 421, Bloor-street W., Toronto, is the secretary of the Ontario Medical Association meeting.

MEDICAL SOCIETY OF LONDON.—The annual general meeting of this society will be held on Monday, May 15th, at 8 P.M., at 11, Chandos-street, Cavendish-square, W., to receive the reports of (1) Council; (2) honorary librarian; (3) chairman of House and Finance Committee, and to elect officers and council for next session.

THE LATE MR. JOSEPH WILLIAM SMITH.—Mr. J. W. Smith, who was surgeon to the Northwich Infirmary and Weaverham Provident Dispensary, died recently at his residence at Weaverham, Cheshire, in his seventy-third year. He was the son of the late Dr. Samuel Smith, whom he succeeded in practice, and received his medical education at King's College, London, qualifying in 1866 with the M.R.C.S. and L.M. and the L.S.A. He was greatly respected and had a large practice, while he found time to do much excellent public work. He was a member of the Cheshire county council from 1889 to 1913 and had been a county magistrate since 1895.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Certifying Factory Surgeons.

ONE of the recommendations of the Retrenchment Committee was to save £12,500 a year to the Exchequer by the abolition of the reports of certifying factory surgeons. A deputation representing medical men interested in the matter has asked the Home Secretary to reconsider the step thus suggested, but Mr. HERBERT SAMUEL intimated that he was prepared to give effect to the recommendation of the committee.

Daylight Saving.

By 170 votes to 2 the House of Commons on Monday, May 8th, agreed to a resolution in favour of the advancement of the hands of the clock by an hour during the summer months so as to induce the community to take greater advantage of the early hours of daylight. On Tuesday the Home Secretary introduced a Bill, called the Summer Time Bill, to give legislative effect to this proposal.

The Military Service Bill.

The House of Commons began the Committee stage of the Military Service Bill on Tuesday, May 9th. Long discussions took place on Clause 1., which applies compulsory military service to all male British subjects between the ages of 18 and 41 resident in Great Britain. The question was raised of the application of this provision to a certain number of medical students. Mr. LONG, who was in charge of the Bill, said that their cases must be considered by the tribunals, as he did not think that it would be possible to make any special provision for them.

HOUSE OF COMMONS.

WEDNESDAY, MAY 3RD.

Chemists in the Army.

Mr. TYSON WILSON asked the Under Secretary for War whether there was a number of qualified chemists in the army whose services were not being used to the best advantage, and whether in view of the demand for dispensers he would take steps in the interests of the army to utilise the skill and knowledge of these men.—Mr. TENNANT answered: All medical units at home and abroad are fully supplied with dispensers. If any qualified chemists who are serving in combatant units make application to be transferred to the Royal Army Medical Corps, the case of each applicant will be considered as vacancies for employment arise.

Re-examination of Rejected Recruits.

Mr. ASQUITH, in the course of his speech introducing the Military Service Bill, said that it provided the power to enable the Army Council to review the medical certificates of those who had been rejected for military service on medical grounds since August 14th, 1915. The reason was a very simple one. As the standard of medical fitness had now been extended, and he thought very properly extended, and the men who were not fitted for active service abroad were now taken for less arduous duties, it was desirable in those cases that there should be at any rate an opportunity to review them. He believed that a great many of the men would be very glad that they should be so reviewed.

THURSDAY, MAY 4TH.

Dental Treatment of Troops in India.

Captain C. BATHURST asked the Secretary for India whether, seeing that the men of the 4th Battalion Wiltshire Regiment and other British troops in India suffered considerably from dental caries and other dental defects, which materially affected their health, the same provision could be made for their dental treatment at the public expense, either by the Indian Government or by the War Office, that was made in the case of other British troops serving overseas.—Mr. CHAMBERLAIN replied: On receiving the letter in which my honourable friend called my attention to the case of the Wiltshire Regiment, I telegraphed to the Government of India. I am also communicating with the War Office on the subject.

Soldiers and Smokers' Heart.

Mr. J. M. HENDERSON asked the Under Secretary for War whether he was aware that there were a very large number of men of the Expeditionary Force in hospital with what was called trench heart, but which was really the result of excessive cigarette and tobacco smoking; and, seeing that the number of cases was increasing, would he have the matter looked into with a view to remedying the evil.—Mr. TENNANT said in reply: A certain number of cases of disordered action of the heart are occurring—the so-called soldiers' heart. This is being investigated in a hospital specially set aside for the purpose. We have no evidence that the number of cases is increasing at present. By some observers this condition is attributed to excessive cigarette and tobacco smoking, and this is being looked into by skilled experts.

Medical Examination of Second-line Units.

Mr. ASHLEY asked the Under Secretary for War whether all men at the time when they joined second-line Territorial units were medically examined to ascertain if they were fit for military service.—Mr. TENNANT answered: All men are medically examined on enlistment and also as soon as possible after joining their units.

Mr. ASHLEY: Is the right honourable gentleman aware that in a considerable number of these second-line units there is a number of men perfectly unfit and of no earthly use for military service? It is a matter of common knowledge. Will the right honourable gentleman have another medical examination made in order to save the country enormous expense?—Mr. TENNANT: Yes, certainly, if my honourable friend will give me particulars of cases.

Sir C. KINLOCH-COOKE: There are thousands of such cases.

Major HAMILTON: Is the right honourable gentleman aware that an order was recently issued that medical officers attached to these units are not to examine men when they join?—Mr. TENNANT: I think my honourable and gallant friend is mistaken. No such order has been issued.

Major HAMILTON: I have seen it in print.

MONDAY, MAY 8TH.

Medical Reports on German Prison Camps.

Mr. J. M. HENDERSON asked the Under Secretary for Foreign Affairs whether he would include in the forthcoming White Paper on British Prisoner Camps in Germany the reports made by officers of the Royal Army Medical Corps who had returned from these camps.—Lord ROBERT CECIL replied: The White Papers hitherto laid before Parliament have included correspondence with the United States Ambassador and reports received through His Excellency only. The reports made by officers of the Royal Army Medical Corps referred to by the honourable Member have no relation to the period covered by the reports which will be included

in the forthcoming White Paper, but relate to a condition of things at a previous date, nor could they now be included without very much delaying the issue of this paper. A considerable portion of Major Priestley's report was embodied in the recently published report of the Government Committee on the treatment by the enemy of prisoners of war on the conditions obtaining at Wittenberg during the typhus epidemic. The question, however, of the separate publication of the reports made by officers of the R.A.M.C. who have returned from Germany will be considered.

Mr. HENDERSON: Surely the reports from men who have actually lived in the camps must be much more reliable and important than a report of a casual visitor.—Lord ROBERT CECIL: I quite agree, and the Government Committee was set up on purpose to consider all such reports and to get a true account of the condition of the prisoners drawn from those reports.

Medically Unfit Soldiers.

Major HAMILTON asked the Under Secretary for War whether he would consider the possibility of posting men who were medically unfit after return from the front to the Army Reserve, or of demobilising them in the case of Territorial units, so that they could return to their home comforts for a few months while receiving massage or other medical attention by attending daily the nearest military hospital.—Mr. TENNANT wrote in reply: From a medical point of view the proposal is not advisable. The men described are much more likely to get fit to return to duty if, on discharge from hospital, they are treated in command depôts where they have the advantage of medical treatment and graduated exercises under proper control.

TUESDAY, MAY 9TH.

Medical Examination of Recruits.

Mr. ASHLEY asked the Under Secretary for War whether he was aware that till recently Southern Command orders included an order to medical officers of units that they should at once medically examine all men joining to ascertain whether they were fit for general military service; that a short time ago an officer high in the medical service informed these officers that it was no business of theirs to inspect recruits, and that a fortnight ago an order was issued in this command that no medical inspection should take place except for infectious diseases; and whether he would at once give instructions that medical examination by the medical officers attached to units was to be resumed, so as to avoid waste of public money by inefficient soldiers being retained for a considerable time in the public service.—Mr. TENNANT answered: I am aware that there has been a change in the orders of the Southern Command in respect of this matter. Previous to the adoption of the system of examination of recruits by selected boards of R.A.M.C. officers, a large number were examined in the first instance by civil medical practitioners, and it was considered necessary that these men on joining their units should be re-examined by the regimental R.A.M.C. officer as the civil medical practitioners have not always the necessary experience in examining recruits. But now that all recruits are examined before enlistment by selected recruiting boards, the second examination by the regimental R.A.M.C. officer is not considered necessary except for the purpose of detecting infectious disease. As it is unnecessary, public money and public time is saved by its being abolished.

Medical Men in Ross-shire and Petrol Supplies.

Mr. MACPHERSON asked the Parliamentary Secretary to the Board of Trade whether he was aware that there was no petrol available in Ross and Cromarty for the use of merchants, surveyors, and doctors who had to use cars on account of the long distances and the lack of convenient railway facilities; and whether he would take the necessary steps to remedy this hardship.—Mr. PRETYMAN said in reply: I am afraid that in present circumstances there are bound to be difficulties in certain cases in securing adequate supplies of petrol. I believe that I have received a complaint from the district mentioned, and it is being dealt with by the Committee which the Board of Trade has recently appointed to take steps for the control of the supply and distribution of petrol.

WEDNESDAY, MAY 10TH.

Medical Men and Motor-car Taxation.

Mr. CATHCART WASON asked the Chancellor of the Exchequer whether he was aware that the increased taxation of motor-cars used by doctors pressed on the medical profession, and that the public interests suffered; and whether he would take into consideration the desirability of making a further concession, with especial consideration to the increased price of petrol and the difficulty of obtaining it.—Mr. MCKENNA replied: I am considering all questions relevant to the proposed increase of motor-car licence duty, but I must add that it would be difficult to justify any change which would give members of the medical profession—who only pay half duty—a greater proportional preference over other users of motor-cars.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

ASH, ALFRED EDWIN, M.D., Ch.B. Vict., L.R.C.P. Lond., M.R.C.S., has been appointed Medical Officer of Health for Honiton (Devon).

BADO, A. J., M.R.C.S., L.R.C.P. Lond., Resident House Surgeon at St. Thomas's Hospital.

BLUETT, D. C., Casualty Officer at St. Thomas's Hospital.

BUATIA, S. L., M.R.C.S., L.R.C.P. Lond., Resident House Surgeon at St. Thomas's Hospital.

CAMPBELL, ANDREW, M.B., Ch.B. Edin., D.P.H., Resident Surgical Officer of the Birmingham and Midland Eye Hospital.

CASTLE, H. H., M.R.C.S., L.R.C.P. Lond., Ophthalmic House Surgeon at St. Thomas's Hospital.

CLARKE, A. H., M.R.C.S., L.R.C.P. Lond., Casualty Officer and Resident Anæsthetist at St. Thomas's Hospital.

CROMBIE, W. M., M.R.C.S., L.R.C.P. Lond., Obstetric House Physician at St. Thomas's Hospital.

GROSE, JOHN SOBEY, L.R.C.P. Lond., M.R.C.S., Medical Officer and Public Vaccinator for the Abbotsham, Buckland Brewer, and Bideford Districts, and Medical Officer to the Workhouse, by the Bideford (Devon) Board of Guardians.

HARRIS, J. C. N., M.R.C.S., L.R.C.P. Lond., Casualty Officer and Resident Anæsthetist at St. Thomas's Hospital.

HARRIS, J. R., Resident House Physician at St. Thomas's Hospital.

HAY, PERCIVAL J., M.D., Ch.B. Edin., Honorary Ophthalmic Surgeon to the Sheffield Royal Hospital.

HENSLEY, E. H. V., Resident House Physician at St. Thomas's Hospital.

HIGGINS, F. E., M.R.C.S., L.R.C.P. Lond., House Surgeon and Resident Anæsthetist at St. Thomas's Hospital.

HOWELL, E. G., M.R.C.S., L.R.C.P. Lond., Resident House Surgeon at St. Thomas's Hospital.

HUXLEY, FRANCES M., M.D. Vict., Assistant Surgeon to the South London Hospital for Women.

HYMAN, O. H., Resident House Surgeon at St. Thomas's Hospital.

MACKENZIE, LEWIS, F.R.C.S. Eng., L.R.C.P. Lond., Acting Tuberculosis Medical Officer for the Borough of Barnstaple (Devon).

MAVROGARDATO, A., M.R.C.S., L.R.C.P. Lond., Resident House Physician at St. Thomas's Hospital.

MOULSON, G., M.R.C.S., L.R.C.P. Lond., Casualty Officer and Resident Anæsthetist at St. Thomas's Hospital.

NAIRNE, N. S., Casualty Officer at St. Thomas's Hospital.

NUTT, W. HARWOOD, M.D., Ch.B. Edin., reappointed Honorary Medical Officer in the Electrical Department of the Sheffield Royal Hospital.

PEARSON, ELLIS, F.R.C.S. Edin., L.R.C.P. Edin., appointed Medical Officer for the Milton District by the Barnstaple (Devon) Board of Guardians.

SIMPSON, GRAHAM, F.R.C.S. Eng., reappointed Honorary Surgeon to the Sheffield Royal Hospital.

STORMER, H. G., M.R.C.S., L.R.C.P. Lond., appointed Casualty Officer and Resident Anæsthetist at St. Thomas's Hospital.

UMANSKI, AUGUSTA, M.B., B.Ch. Leeds, Assistant Medical Officer to the Infectious Diseases Hospital, Seacroft, Yorks.

VEY, F. H., Resident House Physician at St. Thomas's Hospital.

WILKINSON, GEORGE, M.B., B.C. Cantab, F.R.C.S. Eng., reappointed Honorary Aural Surgeon to the Sheffield Royal Hospital.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

When the application of a Belgian medical man would be considered the advertisers are requested to communicate with the Editor.

BARNSLEY, BECKETT HOSPITAL AND DISPENSARY.—House Surgeon. Salary £250 per annum, with apartments, &c.

BELFAST MUNICIPAL SANATORIUM.—Temporary Assistant Resident Medical Officer. Salary £200 per annum, with board, &c.

BIRKENHEAD BOROUGH HOSPITAL.—Junior House Surgeon. Salary £170 per annum, with board, &c.

BIRMINGHAM GENERAL DISPENSARY.—Resident Medical Officer, unmarried. Salary £250 per annum, with apartments, &c.

BOLTON INFIRMARY AND DISPENSARY.—Female Second House Surgeon. Salary £200 per annum, with apartments, &c.

BOLTON UNION.—Resident Assistant Medical Officer for Townleys Hospitals, Farnworth, near Bolton. Salary £250 per annum, with apartments, &c.

BRISTOL ROYAL INFIRMARY.—House Physicians and House Surgeons. Salary at rate of £120 per annum, with board, &c.

BURNLEY, VICTORIA HOSPITAL.—Female House Surgeon. Salary £160 per annum, with residence, &c.

BURY INFIRMARY.—Female Senior House Surgeon and Female Junior House Surgeon. Salary £250 and £150 per annum respectively, with board, &c.

CAMBRIDGESHIRE ASYLUM, Fulbourn, near Cambridge.—Junior Assistant Medical Officer, unmarried. Salary £200 per annum, with board, &c.

CITY OF LONDON HOSPITAL FOR DISEASES OF THE CHEST, Victoria Park, E.—Assistant Resident Medical Officer. Salary at rate of £150 per annum, with board, &c.

DERBY COUNTY ASYLUM, Mickleover, Derby.—Locum Tenens. Salary £6 6s. per week, with board, &c.

DEWSBURY COUNTY BOROUGH.—Female Medical Practitioner. Salary £300 per annum, and out-of-pocket expenses.

DUDLEY, GUEST HOSPITAL.—Assistant House Surgeon for six months. Salary at rate of £120 per annum, with board, &c.

GALWAY HOSPITAL.—Resident Medical Officer and Compounder of Medicine. Salary £100 per annum, with apartments, &c.

HASTINGS, EAST SUSSEX HOSPITAL.—House Surgeon. Salary £100 per annum, with residence, &c.

HYDE, BOROUGH OF.—Medical Officer of Infant Clinic and School Medical Officer. Salary at rate of £350 per annum.
KENT EDUCATION COMMITTEE.—Temporary School Medical Inspector and Medical Officer of School Clinic. Salary at rate of £350 per annum, with travelling and sustenance allowances.
KING EDWARD VII.'S HOSPITAL FOR OFFICERS, 9, Grosvenor-gardens, S.W.—Resident Medical Officer.
LEEDS PUBLIC DISPENSARY.—Two Resident Medical Officers. Salary £200 per annum, with board, &c.
LEWISHAM, BOROUGH OF.—Tuberculosis Dispensary Medical Officer. Salary at rate of £250 per annum.
LONDON TEMPERANCE HOSPITAL, Hampstead-road, N.W.—Non-resident Assistant House Surgeon for six months. Salary at rate of 120 guineas per annum.
MANCHESTER CHILDREN'S HOSPITAL, Pendlebury.—Two Female Resident Medical Officers, unmarried, for six months. Salary at rate of £100 per annum.
MANCHESTER, CITY OF.—Female Medical Officer, to hold Consultations and Infant Clinics at Maternity and Child Welfare Centres, &c. Salary £350 per annum.
MANCHESTER NORTHERN HOSPITAL FOR WOMEN AND CHILDREN, Parkplace, Cheetham Hill-road.—Female House Surgeon. Salary £120 per annum, with apartments, &c.
MANCHESTER, ST. MARY'S HOSPITALS FOR WOMEN AND CHILDREN.—Resident Surgical Officer at High-street Hospital. Salary at rate of £150 per annum, with board, &c.
NEW HOSPITAL FOR WOMEN, Euston-road, N.W.—Female Senior Clinical Assistant to Out-patients. Also Two House Surgeons, House Physician, and Obstetric Assistant (all females), for six months, with board, &c.
NOTTINGHAM GENERAL HOSPITAL.—Assistant House Surgeon. Salary at rate of £250 per annum, with board, &c.
PADDINGTON GREEN CHILDREN'S HOSPITAL, London, W.—Female House Surgeon for six months. Salary at rate of £80 per annum, with board, &c.
ROCHESTER, ST. BARTHOLOMEW'S HOSPITAL, Kent.—Clinical Assistant. Salary at rate of £110 per annum, with board, &c.
ROYAL COLLEGE OF SURGEONS OF ENGLAND.—Examiners and Professors and Lecturers.
SALISBURY GENERAL INFIRMARY.—House Surgeon and Assistant House Surgeon, unmarried. Salary £150 and £100 per annum respectively, with apartments, &c.
SHEFFIELD, JESSOP HOSPITAL FOR WOMEN.—Female Junior House Surgeon, unmarried. Salary £80 per annum, with board, &c.
SHEFFIELD ROYAL INFIRMARY.—House Physician. Salary £120 per annum, with board, &c.
SHEFFIELD UNION HOSPITAL, Fir Vale, Sheffield.—Resident Assistant Medical Officer. Salary £400 per annum, with apartments, &c.
VENTNOR, ISLE OF WIGHT, ROYAL NATIONAL HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST.—Assistant Resident Medical Officer.
VICTORIA HOSPITAL FOR CHILDREN, Tite-street, Chelsea, S.W.—House Physician. Salary £200 per annum, with board, &c.
WEST END HOSPITAL FOR DISEASES OF THE NERVOUS SYSTEM, 73, Welbeck-street, W.—Clinical Assistants to Out-patients' Physicians.
WIGAN, ROYAL ALBERT EDWARD INFIRMARY AND DISPENSARY.—Senior House Surgeon. Salary £250 per annum, with board, &c.

Births, Marriages, and Deaths.

BIRTHS.

BARENDT.—On May 3rd, at 65, Rodney-street, Liverpool, W., the wife of Frank Hugh Barendt, M.D. Lond., F.R.C.S. Eng., of a daughter.
CRAGG.—On May 1st, at Wymering, Hampshire, to Florence Everilda, wife of Cecil Claude Cragg, M.D., Lieutenant, R.A.M.C., a son.
DOTTRIDGE.—On April 4th, at Portland Court, W., the wife of Cecil A. Dottridge, M.B. Lond., of a daughter.
STEPHENS.—On May 5th, at St. Giles, Malvern Link, Worcestershire, the wife of H. N. Stephens, late Staff Surgeon, Royal Navy, of a son.

MARRIAGES.

FEHRSEN—NICHOLSON.—On May 1st, at St. Augustine's, Kilburn, Guy Fehrsen, Lieutenant, R.A.M.C., to Dorothea Edith Warren, elder daughter of the Rev. J. B. Nicholson, C.F., and Mrs. Nicholson, of Swindon.
MCLAY—BARTLETT.—On May 6th, at Holy Trinity Church, Folkestone, Samuel McMurrich McLay, Captain, R.A.M.C., to Florrie, only daughter of Mr. and Mrs. W. J. Bartlett, of Woodstock, Ontario, Canada.
PASLEY—ELLIOTT.—On May 8th, at St. Mary's, West Kensington, Claud John Burgoyne Pasley, M.R.C.S., West African Medical Staff, to Blossom Emily, youngest daughter of the late Major William Elliott, Royal Artillery.
THATCHER—ANNANDALE.—On April 27th, at the Episcopal Church of St. Leonard's, Lasswade, Midlothian, Lewis Hay F. Thatcher, M.D., F.R.C.P. Edin., Captain, R.A.M.C., to Sibyl Muriel, third daughter of James H. Annandale, of The Vale, Polton, Midlothian.

DEATHS.

CHESTER.—On May 5th, at Coney Gree, Upper Hatherley, Cheltenham, Colonel William Litchfield Chester (late R.A.M.C.), aged 65 years.
DONALD.—On May 3rd, at Oakley-street, Chelsea, Robert Donald, L.R.C.P. Edin., Captain, R.A.M.C. (T.F.), aged 55 years.
GODDARD.—On May 2nd, at Montalt-road, Woodford, Essex, Bertram Goddard, M.R.C.S., L.R.C.P. Lond., in his 49th year.
MANSFIELD.—On May 7th, at Royal Naval Hospital, Haslar, Gosport, Deputy Surgeon-General C. J. Mansfield, R.N., M.V.O., in his 55th year.
WAKLEY.—On May 3rd, at Laburnum Cottage, Chertsey, Harriette Anne, widow of Thomas Henry Wakley, F.R.C.S. Eng.

N.B.—A fee of 5s. is charged for the Insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

SHOCK AND THE SOLDIER.

To the Editor of THE LANCET.

SIR,—Many besides myself must have read with pleasure Professor G. Elliot Smith's papers in THE LANCET under the above heading. Talk of "cowardice," "slacking," "malingering," and the like, comes so readily from the superior but somewhat pedantic people, who so largely control our politics, and, I am afraid, are not altogether unknown in the domain of medical psychology, that it is almost a surprise to come upon articles written with such engaging freshness, with so kindly and comprehensive an appreciation of the real inwardness of the problems which Professor Smith discusses.

Particularly valuable is the insight which we here obtain into the kind of temperament and character which furnishes the greater number of the victims of shock. No one who has even a small first-hand knowledge of the facts will suppose that these people are any less courageous than others. Many of them have given evidence of an effusive patriotism, of a willingness to risk careers and life itself in the present crisis, which makes the ineffectiveness of their sacrifice not a little disappointing and even tragic. What rendered their efforts unavailing was the disastrous reaction on their too sensitive nerves of the high strains, actual or anticipated, of the battle-field.

In searching for remedies there is really no need to discuss, as some authorities are disposed to do, whether the phenomena are more psychical or more physical. In their ultimate analysis the two things do not perhaps admit of absolute differentiation. What is alone of importance is the pathological condition, with this double mental and material aspect, with which, as physicians, we have to deal. We are face to face with the fact that there is a class of persons who, by constitution and by their previous life experience, are unfit for military service, and who yet, by enlistment or otherwise, are now in the army in considerable numbers. They are, in the main, gentle, often mentally brilliant creatures, for whom the rough and tumble of life, whether in war or peace, are a too ungenial setting. In war they go under in the way we see. In peace they are fated to succumb in the struggle with less sensitive, stronger-nerved competitors, but in favourable circumstances may develop gifts which are ultimately of far greater importance to the world than the war aptitude of the more stably-organised. Unless work can be found for them for which they are qualified by previous training and experience the only thing to be done is to discharge them from the army, whatever expense the necessary pensioning of them until they have recovered from the injury sustained in the war may entail. We may perhaps hope that the knowledge we are now gaining will enable the neurologist of the future by study of the life-history and heredity of applicants for military service to reject a large proportion of those who are liable to suffer from shock.

A thing which has greatly surprised me is the naming of the symptoms in so many of the descriptions that are given of them "hysteria." "Neurasthenia," "melancholia," even "hypochondria" I can understand, but "hysteria" seems to me in nearly all cases dubious, and, in far the majority, wholly inappropriate. Apart from soldiers returned from service, I have notes of some 60 patients who suffered from Zeppelin scare during last summer's raids. Among the men thus affected there was not a single instance which could with the utmost latitude of language, or at least by any stretch of the language which I am accustomed to use in describing symptoms, be appropriately spoken of as "hysterical." In the case of two women, who, on hearing the explosions, became at once unconscious and remained so for a considerable time, the name might apply; but in the large majority, even of my female cases, the symptoms had no relation to what is ordinarily understood by hysteria. Neurasthenia, verging towards melancholia and often involving complete and prolonged inability to concentrate upon work, was the main feature of the trouble in men. Among women the chief complaint was of dyspepsia and insomnia. How far the nervous system is permanently damaged or has its reactions thrown out of order only temporarily will not be known till we have more complete records or till peace is declared. In many cases, more especially in men, it is impossible to feel any assurance that the disease will ever be entirely cured. One patient, a woman, has become definitely insane. I think it will be found in the end that many temperamental instabilities, which but for the war would have remained latent, or at least unobserved, have become more or less permanently manifest.

I am, Sir, yours faithfully,

London, April 25th, 1916. I. B. MUIRHEAD.

HEALTH AND SANITATION IN NIGERIA.

A REPORT on the affairs of Nigeria for 1914 by Sir Frederick Lugard has recently been presented to Parliament, the delay in its production being due to the unusual importance of the events of the year under review, which witnessed the amalgamation of the two Administrations of Northern and Southern Nigeria into a single Government, and the outbreak of war in Europe with its consequential war in the Cameroons (adjoining Nigeria). The European population of the Colony and Protectorate is estimated at 3000, of whom about 1300 are officials. The native population is estimated at 17½ millions, the average density in the Northern Provinces being about 37 to the square mile, and in the Southern Provinces about 106. During the year there were 27 deaths amongst the European population, as compared with 13 in 1913, the increase being mainly due to war casualties on the Cameroon frontier. The number of European officials invalided was 61, as against 50 in 1913. Malaria is still the prevailing cause of ill-health among Europeans. There were amongst Europeans 6 deaths due to blackwater fever and 4 to yellow fever. The most common diseases among the native population are pneumonia, constipation and diarrhœa, anæmia, neuralgia, and rheumatic affections. Pneumonia is one of the most serious acute diseases from which the native suffers; it is most common during the cold harmattan season. There was a large increase in the number of cases of beri-beri reported, almost entirely in the Cross River districts; 227 cases occurred with 5 deaths, none of these being Europeans. Dysentery showed an increase, and there was an epidemic of it in the Udi prison, where there were 9 deaths. Emetine has been largely used in treatment, with good results. Nearly 90 per cent. of the cases of leprosy in the Southern Provinces occur on the River Niger in the neighbourhood of Onitsha, while the Eastern Provinces appear to be almost free from the disease. A modified system of segregation and isolation, by the establishment of leper settlements or "villages" maintained by the native community, principally in the neighbourhood of the larger towns, has been introduced. A severe epidemic of small-pox occurred in the Ekiti country in the Southern Provinces. This district is believed to be the last stronghold of what remains of the now almost extinct Shopono, or small-pox worship, which was once the scourge of Yorubaland. Action is now being taken by the Government to stamp out what remains of this pernicious juju in the Ekiti country. A systematic investigation of the prevalence of ankylostomiasis has been instituted with a view to determining, if possible, to what extent this disease and malaria are responsible for the anæmia so common to the country, and drawing conclusions as to the efficacy of treatment by thymol and other drugs. There is no doubt that the disease is very widespread; the average number infected works out at about 43 per cent., but Europeans are practically exempt.

Sanitary progress has been well maintained. The water-supply of Kano, which had been a source of anxiety for some time, was thoroughly investigated by the sanitary officer, who, *inter alia*, succeeded in isolating a hitherto unknown bacillus closely allied to the typhoid group. Drastic steps were taken, and the end of the year found the water-supply as much improved as it is ever likely to be until the installation of the proposed new supply from the River Shalawa. Two European officers were invalided from the Benue with trypanosomiasis, while 5 natives were admitted to hospital with the same infection, one of whom died from sleeping sickness. The sanitary officer proceeded up the Benue to investigate the extent of the disease and to devise preventive measures. Special attention has been given to steps directed against the possible introduction of plague from the Gold Coast and propagation and spread of yellow fever. A beginning was made with the systematic training of intelligent young natives as sanitary inspectors, and the teaching of hygiene in schools and by practical demonstrations is being continued.

A REQUEST FOR INFORMATION.

To the Editor of THE LANCET.

SIR,—"Family Histories" should have little difficulty in solving his three queries.

1. *New Sydenham Society.*—You have already supplied him with information upon this point.

2. *Dr. Sanders, of York (1817–1823).*—No medical directory was published at that time. As, however, Dr. Sanders was Lord Mayor of York, the town clerk of that city would supply your correspondent with Dr. Sanders's Christian name and details of his civic career. Possessed of his Christian name, Foster's "Alumni Oxoniensis," Greene's "Athenæ Cantabrigienses" and graduate lists of other Universities (generally found in large public libraries) should be consulted as to Dr. Sanders's parentage and academic achievements.

3. *Dr. Robert Pope.* "dear old Pope," as he was affectionately called by the children of the Royal Family, resided at Staines, from which he was frequently summoned to Windsor Castle by Queen Charlotte to attend the Princess Amelia, then dying of consumption. He was a Quaker, and his memoir will be found in the "Biographical Catalogue of the Society of Friends," 1888. Under the heading "Medical Adventures on Hounslow Heath," I published a short account of Dr. Pope in the *West London Medical Journal*, January, 1912. He is also frequently referred to in Pemberton's "Romance of the Princess Amelia."

I am, Sir, yours faithfully,

S. D. CLIPPINGDALE, M.D.

Holland Park-avenue, W., May 6th, 1916.

SOUTH TRAVANCORE MEDICAL MISSION.

THIS branch of the London Missionary Society in its report for the year 1915, giving a record of excellent work, seeks financial help for the better equipment of the branch hospitals and dispensaries in the coming year, pointing out that £8 supports a nurse annually, £5 a cot, and £3 an orphan. A summary of the work of the mission shows that it deals with 11 hospitals and eight dispensaries—189 beds. There are 18 trained assistants and eight medical students. The new patients for the year were 115,482, and the surgical operations, including 642 major operations, 8480. There were 36 male and 7 female patients in the Leper Asylum, and 21 children in the Orphanage.

TO PIPE SMOKERS.

To the Editor of THE LANCET.

SIR,—I think it is generally admitted that pipe-smoking in the tropics does not possess the same charm which it has in colder climates. The smoke seems to burn the tongue too readily, and the use of the pipe is generally abandoned in favour of cigars and cigarettes, until a return to cooler climates makes the smoker search for seasoned friends in odd forgotten corners. This was my own experience for nearly 20 years until a few months ago I was introduced to the well-known calabash pipe. The result was a revelation, and pipe-smoking in the tropics became an abounding pleasure to me for the first time. It then struck me that perhaps the well-known sensation of "burning the tongue" might be really a temperature effect rather than an increase in ammonia content, acridity, or other chemical factors.

The following experiments were therefore undertaken; and the results, with their tentative conclusions, may perhaps be of interest to your readers:—

Data.—(*a*) A 5-inch bull-dog briar. Vulcanite mouthpiece. One month old. Bowl not much caked. (*b*) A small-sized calabash pipe. Removable inner bowl of meerschaum. Vulcanite mouthpiece. Two months old. Bowl fairly caked. (*c*) Each pipe artificially smoked to the very end, by the use of a rubber tube and a gas-pump, simulating normal conditions as closely as possible. (*d*) Bulb of a centigrade thermometer (certificated, non-registering) inserted in the rubber tube at ¼ inch from the opening of the mouthpiece, and direct continuous observations taken. (*e*) The pipes allowed to get quite cool between each experiment. (*f*) Only well-known tobaccos used.

Table of Maximum Smoke Temperatures in Degrees Fahrenheit.

—	Air at 55° F. (i.e., mean temperate climate)	Air at 82·4° F. (i.e., mean tropical climate
BRIAR PIPE—		
Tobacco A (fine-cut and very moist)	107·6	113·0
Tobacco B (fine-cut, dry)	105·8	111·2
,, C (coarse-cut, very dry)	98·6	100·4
CALABASH PIPE—	(N.B., Breath temperature, 91·4)	
Tobacco A	87·8	89·6
,, B	86·0	87·8
,, C	82·4	86·0

Conclusions.—1. Moist tobacco gives hotter smoke than dry tobacco. 2. Fine tobacco gives markedly hotter smoke than does coarse-cut tobacco. 3. Smoke from a briar is very considerably hotter in the tropics than in cold climates, especially with fine-cut tobaccos. 4. Smoke from a briar is *always* hotter than the breath temperature, although with a coarse tobacco on a cold winter's day the difference of temperature would be hardly noticeable. 5. Variations in air temperature or in the type of tobacco used have comparatively slight effect on the temperature of the calabash smoke—the latter being always cooler than the temperature of the breath. 6. According to the tobacco used, a calabash gives smoke which is 14 to 24 degrees cooler than a briar. 7. A coarse-cut tobacco, dry, and smoked in a calabash pipe would seem to be the acme of "cool" pipe-smoking.

I am, Sir, yours faithfully,

Singapore, March 28th, 1916. GILBERT E. BROOKE.

MATERNITY DEATH-RATE IN CORNWALL.

THE medical officer of health for Cornwall, in his annual report for 1915, alludes to the mortality from child-bearing in Cornwall, the death-rate being 4·5 per 1000 births compared with 4·0 for England and Wales. This mortality-rate depends principally on the quality of skilled assistance, before, during, and after the delivery of the mother, and the Cornwall County Nursing Association are trying to provide nurse-midwives in the rural districts, where at present none are resident.

C. D. S.—It is generally supposed that the Dr. Caius of Shakespeare was in no way meant to represent the learned physician and second founder of Gonville and Caius College, Cambridge.

O. W.—The academical costume of a Member of the Royal College of Surgeons of England is a black stuff gown with crimson satin facings. The gown of the F.R.C.S. is similar, but has more conspicuous facings and a modified sleeve. The usual mortar-board with black tassel is the regulation cap, but hoods are not provided, having been considered emblematic of university degrees.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, May 10th, 1916.

Date.		Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
May	4	29·700	S.W.	...	109	70	50	52	55	Cloudy
,,	5	29·386	E.	0·10	111	71	54	55	59	Cloudy
,,	6	29·446	S.W.	0·02	96	63	50	53	55	Cloudy
,,	7	29·550	S.W.	0·18	70	60	48	52	56	Cloudy
,,	8	29 690	S.W.	0·29	59	50	44	42	45	Cloudy
,,	9	29·706	S.	0·23	84	54	42	47	48	Raining
,,	10	29 984	N.W.	...	107	58	41	45	49	Fine

BOOKS, ETC., RECEIVED.

ALLEN, GEORGE, AND UNWIN, LIMITED, London.
European Anarchy. By G. Lowes Dickinson. Price 2*s.* 6*d.* net.

BADGER, RICHARD G., Boston. COPP CLARK COMPANY, Toronto.
Manual of Vital Function Testing Methods and Their Interpretation. By Wilfred M. Barton, M.D. Price $1.50.
Nervous Children. By Beverley R. Tucker, M.D. Price $1.25.

CAMBRIDGE UNIVERSITY PRESS, Cambridge.
Cerebro-Spinal Fever. By Michael Foster, M.A., M.D., Captain, R.A.M.C.; and J. F. Gaskell, M.A., M.D., Captain, R.A.M.C. Price 12*s.* 6*d.* net.

CASSELL AND CO., LIMITED, London.
The Other Side of the Lantern: An Account of a Commonplace Tour Round the World. By Sir Frederick Treves, Bart., G.C.V.O., C.B., LL.D. Price 2*s.* 6*d.*

CHATTO AND WINDUS, London.
The Night Cometh. By Paul Bourget. Translated by G. F. Lees. Price 6*s.*

CLARIDGE, G., AND CO., Caxton House, Bombay.
Indian Manual of First Aid. By Lieutenant-Colonel R. J. Blackham, C.I.E., R.A.M.C. Twelfth edition. Price R.1.

"ELLINGWOOD'S THERAPEUTIST," 32, North State-street, Chicago.
American Materia Medica, Therapeutics, and Pharmacognosy. By Finley Ellingwood, M.D. With Practical Consideration of the Principles of Pharmacy and Pharmacognosy. By Professor J. Uri Lloyd, Ph.M., Ph.D., LL.D.

HEINEMANN, WILLIAM, London.
Pathological Lying, Accusation, and Swindling: A Study in Forensic Psychology. By Wm. Healy, A.B., M.D., and Mary Tenney Healy, B.L. Price 10*s.* 6*d.* net.

LAURIE, T. WERNER, London.
The Great Unmarried. By Walter M. Gallichan. Price 7*s.* 6*d.*

LEWIS, H. K., AND CO., London.
A New Treatment for Gonorrhœa. By Charles Russ, M.B. Lond., M.R.C.S. Eng., L.R.C.P. Lond. Price 3*s.* net.
Modern Medicine and Some Modern Remedies. By T. B. Scott. With Preface by Sir Lauder Brunton, Bart. Price 4*s.* 6*d.* net.
Diagnosis and Treatment of Heart Disease. By E. M. Brockbank, M.D., F.R.C.P. Second edition. Price 3*s.* 6*d.* net.
Notes on Galvanism and Faradism. By E. M. Magill, M.B., B.S., D.P.H.

MACMILLAN COMPANY, New York and London.
Medical and Veterinary Entomology. By W. B. Herms. Price 17*s.* net.
The New Public Health. By H. W. Hill, M.D., D.P.H. Price 5*s.* 6*d.* net.

WRIGHT, JOHN, AND SONS, Bristol.
Text-Book of Nervous Diseases. By Charles L. Dana, A.M., M.D., LL.D. Eighth edition. Price 21*s.* net.
Our Baby: for Mothers and Nurses. By Mrs. J. Langton Hewer. Fifteenth edition. Price 1*s.* 6*d.* net.

YALE UNIVERSITY PRESS, Newhaven, Conn., and New York City. OXFORD UNIVERSITY PRESS, and HUMPHREY MILFORD, London.
Changes in the Food Supply and their Relation to Nutrition. By Lafayette B. Mendel. Price 50 cents.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Tuesday, May 16th.

THERAPEUTICS AND PHARMACOLOGY (Hon. Secretaries—W. Langdon Brown, Philip Hamill, J. Gordon Sharp): at 4.30 P.M.
Annual General Meeting.—Election of Officers and Council for Session 1916–1917.
Discussion:
On the "Treatment of Diabetes by Alimentary Rest," will be opened by Dr. O. Leyton.
Dr. Spriggs, Mr. Joseph Barcroft, F.R.S., Dr. Ryffel, and Dr. Langdon Brown will take part.

PSYCHIATRY (Hon. Secretaries—Bernard Hart, G. F. Barham): at 6 P.M.
Annual General Meeting.—Election of Officers and Council for Session 1916–1917.

Thursday, May 18th.

DERMATOLOGY (Hon. Secretaries—A. M. H. Gray, J. E. R. McDonagh): at 5 P.M.
Annual General Meeting.—Election of Officers and Council for Session 1916–1917.
Exhibition of Cases (at 4.30 P.M.).
Cases:
Dr. George Pernet: (1) Tertiary Syphilis in a Woman treated by Intramine; (2) Urticaria Pigmentosa in an Infant.
Dr. Graham Little: (1) Parakeratosis Variegata; (2) Lichen Scrofulosorum with Scrofulodermia.

Friday, May 19th.

OTOLOGY (Hon. Secretaries—W. M. Mollison, E. D. D. Davis): at 5 P.M.
Annual General Meeting.—Election of Officers and Council for Session 1916–1917.
Cases and Specimens:
Will be shown by Mr. J. S. Fraser, Sir William Milligan, Mr. Sydney Scott, Mr. W. M. Mollison, and others.
Mr. W. M. Mollison: A Note on the Monochord.

ELECTRO-THERAPEUTICS (Hon. Secretaries—S. Gilbert Scott, E. P. Cumberbatch): at 8.30 P.M.
Annual General Meeting.—Election of Officers and Council for Session 1916–1917.
Exhibition of X Ray and Electro-Medical Apparatus. Radiographs, Lantern Slides, &c., will also be exhibited.
Members wishing to show Plates, &c., will kindly communicate as soon as possible with Mr. S. Gilbert Scott, 6, Bentinck-street, W.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.
MONDAY.—8 P.M., Annual General Meeting to receive the Reports of:—(1) Council, (2) Hon. Librarian, (3) Chairman, House and Finance Committee, and to Elect Officers and Council for next Session.

LONDON DERMATOLOGICAL SOCIETY, St. John's Hospital, 49, Leicester-square, W.C.
TUESDAY.—4.30 P.M., Cases sent for Consultation. Demonstration of Pathological Specimens. Exhibition of Clinical Cases by Dr. J. L. Bunch, Dr. M. Dockrell, Captain W. Griffith, Dr. W. K. Sibley, and Dr. C. Kempster. 5 P.M., Paper:—The President (Dr. J. L. Bunch): Dermatitis due to Hair Dyes.

ROYAL MICROSCOPICAL SOCIETY, 20, Hanover-square, W.
WEDNESDAY.—Paper:—Mr. J. W. Purkiss: Some Suggestions regarding Visual Efficiency in the Use of the Microscope and Other Optical Instruments.

SOCIETY OF TROPICAL MEDICINE AND HYGIENE, 11, Chandos-street, Cavendish-square, W.
FRIDAY.—5.30 P.M., Paper:—Major J. M. Atkinson, R.A.M.C.: Cerebro-spinal Fever, with the Notes of Some Cases.—Dr. A. C. Stevenson will show some Specimens of Nodules in Lung from a Case of Morphia Injectors' Septicæmia (Whitmore's Disease), and Cultures of a Bacillus isolated from the same.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.
MONDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye. Dr. Simson: Diseases of Women.
TUESDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Addison: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.
WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations. Dr. Simson: Diseases of Women.
THURSDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye.
FRIDAY.—10 A.M., Dr. Simson: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Addison: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.
SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Eye Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.
MONDAY.—Clinics:—10.30 A.M., Surgical Out-patients (Mr. E. Gillespie). 2.30 P.M., Medical Out-patients (Dr. T. R. Whipham): Gynæcological Out-patients (Dr. Banister). 3 P.M., Medical In-patients (Dr. R. M. Leslie).

TUESDAY.—2.30 P.M., Surgical Operations (Mr. Carson). Clinics:—Medical Out-patients (Dr. A. G. Auld); Surgical Out-patients (Mr. Howell Evans); Nose, Throat, and Ear Out-patients (Mr. C. H. Hayton). Radiography (Dr. Metcalfe). 3.30 P.M., Medical In-patients (Dr. A. J. Whiting).
WEDNESDAY.—Clinics:—2.30 P.M., Throat Operations (Mr. C. H. Hayton). Children Out-patients (Dr. T. R. Whipham); Eye Out-patients (Mr. R. P. Brooks); Skin Out-patients (Dr. H. W. Barber). 5.30 P.M., Eye Operations (Mr. R. P. Brooks).
THURSDAY.—2.30 P.M., Gynæcological Operations (Dr. A. E. Giles). Clinics:—Medical Out-patients (Dr. A. J. Whiting); Surgical Out-patients (Mr. Carson); Radiography (Dr. Metcalfe). 3 P.M., Medical In-patients (Dr. R. M. Leslie).
FRIDAY.—2.30 P.M., Surgical Operations (Mr. Howell Evans). Clinics:—Medical Out-patients (Dr. A. G. Auld); Surgical Out-patients (Mr. E. Gillespie); Eye Out-patients (Mr. R. P. Brooks).

THE THROAT HOSPITAL, Golden-square, W.
MONDAY.—5.15 P.M., Special Demonstration of Selected Cases.
THURSDAY.—5.15 P.M., Clinical Lecture.

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IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITOR," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention should be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, *and when accompanied by blocks it is requested that the name of the author, and if possible of the article, should be written on the blocks to facilitate identification.*

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

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Hunterian Lectures
ON
LINKS IN A CHAIN OF RESEARCH ON SYPHILIS.

Delivered before the Royal College of Surgeons of England

BY J. E. R. McDONAGH, F.R.C.S. ENG.,
SURGEON, LONDON LOCK HOSPITAL, ETC.

LECTURE II.[1]

Delivered on March 8th, 1916.

MR. PRESIDENT AND GENTLEMEN,—It will be remembered that, in the "side-chain" theory, Ehrlich considered that the union between antibody and antigen was due to chemical affinities which each of these bodies possessed for one another. Then Ehrlich conceived the idea that the principle could be applied to treatment, "chemotherapy" being the name which the application later received.

CHEMOTHERAPY.

The principle was shortly this: To find drugs, the chemical groups of which would combine with the chemical groups of the parasites to be attacked, without combining with the chemical groups of the host's cells. The chemical groups of both the drugs and the cells received the name of "chemoceptors." The disease which Ehrlich hoped to combat was sleeping sickness, and as arsenic was the body which appeared to have the greatest influence upon the disease experiments were undertaken with this metal.

For some time after the commencement of his experiments Ehrlich appears to have been of the opinion that the sole receptors between the chemical groups in the protoplasm of the parasites and in the drugs used were the arsenic receptors. How Ehrlich could ever think that arsenic would find its chemical affinity in the protoplasm of cells, and it is to be remarked, in only certain cells, is difficult to understand, and it is surprising that most of us should still consider that this element is of paramount importance in the synthetic antisyphilitic remedies. That other receptors existed as well was shown only when it was noted that the action of arseno-phenyl-glycine was not affected by previously subjecting the parasites to the action of the arsenic derivative of phenyl-oxy-acetic acid. Then it was assumed that acetic acid receptors existed as well. As fatty acid receptors were said to exist in the protoplasm of the parasites, it was only logical to suppose that amino-acid receptors would be found there also. Working upon this hypothesis Ehrlich discovered salvarsan.

According to Ehrlich, salvarsan works by means of its arsenic receptors and its ortho-amino-phenol receptors. When it was discovered later that a certain drug had a fatal action on one kind of parasite and not upon another kind, although in both instances a "combination" occurred between the drug and the bodies of the parasites, some further explanation of the action of salvarsan was required. Consequently, salvarsan was stated to act in the following way: The arsenic was considered to be the toxophore group, the benzene ring the carrier, and the amino groups the haptophore groups.

Summing up Ehrlich's views as to the mode of action of salvarsan, we find that a union takes place between the drug and certain parasites, with a destructive action upon the latter. What the nature of the union is, and why the death of only certain parasites should follow, are not explained.

There are two facts which stand out in Ehrlich's work on chemotherapy, and which appear to have been overlooked by him and his school, but which, nevertheless, are important, as they go some way towards explaining the *modus operandi* of the subject. The first fact is that trypanosomes can be rendered arsenic-fast, and that organisms which have been rendered arsenic-fast are immune to arsenical compounds only. To this there is an important exception. For instance, it was found that organisms which had been rendered immune to the arsenical compounds were also immune to pyronin. The other fact is that, although salvarsan could be proved to enter into "combination" with the bodies of many, if not of all, parasites *in vitro*, it did not necessarily exert a fatal action upon them all, but only upon organisms such as the trypanosome, the spirochæta pallida, the spirillum of recurrent fever, &c.

From the points I have already brought forward dealing with the cause of syphilis, the chemistry of the organism, and the rationale of the Wassermann reaction, I will attempt to explain what is the probable action of salvarsan. When this is complete I will deal with some points about the chemistry of the drug and its allied bodies, and then with the lines of research along which I thought chemotherapy would afford the best results, culminating in my discovery of some new drugs which are considerably less toxic than the arsenical compounds.

MODE OF ACTION OF ANTISYPHILITIC DRUGS.

Before discussing the mode of action of the antisyphilitic drugs it is necessary first to pay some attention to the way in which the body naturally protects itself against syphilis. The protective power of the body can be divided into two groups: (1) the power which acts generally—i.e., the lipoid-globulin molecules of the serum; (2) the power which acts locally—i.e., the plasma cells.

The plasma cell is typical of chronic inflammation, whatever be the cause thereof. In all instances the plasma cell is morphologically the same, but, although its gross action is similar in every instance, it is nevertheless specific in each case. To be more exact, one should call the specificity a group specificity, not an individual specificity, since the plasma cells behave in the same manner, as is to be here described, in trypanosomiasis as in syphilis, and also in some other diseases. This specificity exhibited by the plasma cells is the same as that exhibited by the lipoid-globulin molecules of the serum, and, so far as it concerns chemotherapy, it is solely due to certain physical properties which these two protective powers possess in protozoal diseases. In other words, the specific action of the synthetic antisyphilitic remedies is not due to chemico-physical properties which constitute specificity, as we see it in infections and in specific immunity reactions.

Properties of Antiprotozoal Lipoid-globulin Molecules.

Consideration must now be given to these peculiar physical properties of the antiprotozoal lipoid-globulin molecules. The lipoid-globulin molecules in the serum of protozoal diseases, especially in syphilis, are characterised by their large size and their increased adsorptive capacity. As the disease becomes more and more chronic, the size of the molecules and their adsorptive capacity increase. As has been already explained, a parasite is vanquished *in vivo* by a change which takes place on its surface. This change causes a local alteration of the surface tension, which so disturbs the normal permeability that the organism perishes. This change is brought about by adsorption. Like most physical and chemico-physical reactions, the phenomenon of adsorption is dependent upon active oxygen. Therefore some ratio exists between the destructive power of a molecule and its supply of active oxygen. In the early stages of the disease it is naturally to be expected that the supply of active oxygen will be as great as the body without extra assistance can manage. If the supply of active oxygen is not sufficient to rid the host of its parasites, the disease becomes chronic, and, all the direct methods of producing active oxygen having failed, the host is obliged to obtain it indirectly. Active oxygen is obtained indirectly by increasing the reducing action; hence the reason why the lipoid-globulin molecules are larger and have a greater adsorptive and reducing action in late than in early cases of syphilis.

There are three actions exhibited by the lipoid-globulin molecules in the serum: (1) adsorption; (2) oxidation; (3) reduction. In virtue of the size and of the increased adsorptive capacity of the antiprotozoal lipoid-globulin molecules, it will follow that their powers of oxidation and reduction may be enhanced by oxidising and reducing agents, and that a ratio must exist between the amount of active oxygen and active hydrogen produced and the degree of the adsorbed state in which the oxidising and reducing agents are.

More light can be thrown on this interesting subject if attention be now paid to the active oxygen and active hydrogen contents of cells. This may be best done by

[1] Lecture I. was published in THE LANCET of May 13th, 1916, p. 981.

referring to the oxygen positions in the cells as a chain, "the oxygen chain," and then by referring to the hydrogen positions. Each link of the oxygen chain is made up of a peroxide and a ferment (peroxidase), which activates it in various degrees, according as to whether the first or last link of the chain is being dealt with. The first link is the red blood corpuscle, which contains a peroxide and a peroxidase; the ferment action is further increased by the iron in the hæmoglobin, which acts as a catalyst in the form of an hydroxide. Oxidising enzymes have their action increased by metals; attention need only be drawn to the accelerating action manganese has upon some plant oxidases in support of this statement. Red blood corpuscles supply every tissue with oxygen in an active state

The next link in the chain is a mast cell, one of the functions of which is to supply the basal cell layer of the epidermis with the active oxygen for the tyrosine-tyrosinase reaction, which results in the production of pigment, and this is one of the protective mechanisms of the body. In support of this statement reference need only be made to the well-recognised increase of mast cells in urticaria pigmentosa, ephelides, and all known pigmentary affections of the skin. Another function is, possibly, to supply the next link with free active oxygen—namely, the nuclei of the cells of inflammation.

The next link in the chain is an eosinophile cell, the action of which is probably analogous to that of the mast cell. Between these two cells there is a fundamental difference, which is a difference of reaction. The mast cell granules are basophilic, the eosinophile granules are acidophilic. In some chronic infections the mast cell predominates; in others the eosinophile cell is most to the fore; both are carriers of peroxidases, hence the reaction of the base, as to whether it is acid or basic, possibly plays some rôle in the combating of infections.

The nuclei constitute the next link, as they contain a peroxide and a ferment (peroxidase) for activating the same, but this ferment is not nearly so strong as the peroxidase in the first three links. The activated oxygen in the nucleus is used mainly for the purpose of division, and partly by the protoplasm of the cell.

The last link in the chain is the protoplasmic, which contains a peroxide, but only a feeble peroxidase. The main peroxidase probably comes directly from the nucleus, and indirectly from other cells which contain peroxidases, through the blood serum. The oxygen positions are those in which active oxygen can be demonstrated, the active oxygen being formed by the action of ferric hydroxide protein (peroxidase) on hydrogen peroxide (peroxide) according to the following equations:—

$$R.Fe + 4H_2O = R.Fe(OH)_8 + 4H^{\cdot} + OH'$$
$$R.Fe(OH)_8 + 5H + 2H_2O_2 = R.Fe + 6H_2O + O''$$

The hydrogen positions are to be found very marked in the mast cell granules, in the lipoid-globulin "envelope" of nucleoli and in the protoplasm of plasma cells. These positions are recognised by the affinity they possess for pyronin, and by the ease with which they decolourise methylene violet, methyl green, and malachite green.

The reducing action of the lipoid-globulin molecules, or, as it may be called, the reducase system, is analogous to the oxidising action or the oxidase system. A perhydridase takes the place of a peroxidase, and a perhydride the place of a peroxide. The action of a perhydridase on a perhydride is to form active hydrogen, which corresponds to the active oxygen in the oxidase system. The perhydridase is a di-sulphide protein, and the equation of its action is as follows:—

$$2\,R.SH + S = H_2S + R.S.S.R.$$
$$R.S.S.R. + 2H + 4OH = R.S. + R.SH. + 2H_2O_2 + H^{\cdot}$$

It is seen, then, that in the reducase system a non-metal takes the place of a metal.

Results of Treatment with Metals and Non-Metals.

Summing up the last few points, it may be noted that metals increase the production of active oxygen, and non-metals the production of active hydrogen. Therefore, from what has gone before, it will now be seen that extra active oxygen can be produced in the serum of the host, directly by the administration of strongly adsorbed metallic compounds, and indirectly by the administration of strongly adsorbed non-metallic compounds. Without treatment, the lesions of syphilis vanish because the lipoid-globulin molecules of the serum and the plasma cells contain a stereo-chemical molecular configuration homologous to those of the parasitic lipoid-globulin molecules, an homology which is necessary for perfect adsorption, and because they contain active oxygen necessary for the adsorption which is formed directly by iron hydroxide and indirectly by a disulphide.

Since we do not know the chemical formula of the protozoal lipoid-globulin particles, it is impossible to synthesise a compound homologous to them. Therefore the only way in which we can assist the host is to increase his supply of active oxygen, which we do directly with arsenic, aluminium and iron, and possibly also with antimony, and indirectly with iodine and sulphur. The degree of action of these elements is regulated by three factors, which will be more fully discussed later, but it may be mentioned here that they are (1) molecular weight; (2) valency; (3) as to whether the compound is strongly adsorbed or not.

Treatment then assists the host's resistance by increasing his amount of active oxygen. Therefore, treatment destroys the parasites indirectly, and not directly, as Ehrlich thought.

A most interesting point now arises—namely, why are the spirochætæ destroyed more quickly than the other phases, and why so quickly by the metallic compounds? Chemistry showed that the male gamete, or spirochæta pallida, had the strongest reducing action of all the phases. In *in vivo* staining it showed a marked affinity for methylene-red, and it increased the reducing action of the female cell after impregnation. In this very strong reducing action in my view lies the solution of the problem as to why the adult male phase, the female phase after impregnation, and not the other phases, stain with silver nitrate in Levaditi's method of staining, and as to why metallic compounds act more markedly upon the first two than do the non-metallic compounds.

The reducing action is due to an unsaturated fatty acid—a substance in which the male cell is specially rich—for two reasons: (1) because it is the result of an intracellular development; (2) because it has a very important function to perform—namely, that of impregnation. In other phases where the metabolism is less active and the cells are more or less in resting forms, the fatty acids are more likely to be saturated than unsaturated. The more unsaturated a fatty acid is in a complex the more free hydroxyl groups will there be. To these free hydroxyl groups different chemical substances can become attached, especially if they are free metals possessing a positive charge; therefore the spirochæta pallida, owing to the fact that it contains more free hydroxyl groups, can have its lipoid-globulin molecules altered by substances which combine immediately with them.

In staining tissue with silver nitrate in order to get a black colour two things are necessary: one is that the silver must be adsorbed; the other is that it must be reduced *in situ*. Owing to the free hydroxyl groups in the lipoid-globulin "envelope" of the spirochæta pallida the silver is readily taken up and reduced by the pyrogallic acid. In the other phases, on the other hand, there are no free hydroxyl groups to take up the silver, so they therefore cannot stain black. The action of the metallic compounds is also to be explained in this way.

The arsenic, aluminium, and iron in their respective compounds—salvarsan, aluvine, and ferrivine—become liberated after the amino groups in the compounds have become adsorbed by the lipoid-globulin molecules. The free metals, being positively charged and tri-valent, will adsorb three atoms of the negatively charged hydroxyl ion, and, as more of the metal becomes deposited in those positions in which the parasites are located in their avidity for free hydroxyl ions, they will naturally seize upon some belonging to the adult male phase and to the female phase after impregnation, hence the immediate death of these two phases.

As there are no free hydroxyl groups in the other phases the metals cannot become so readily attached to them. The destruction of the other phases is brought about indirectly by the stimulating effect the metals have upon the adsorptive action of the protoplasm of the plasma cells and of the lipoid-globulin molecules (antibody) of the serum. Therefore, the action of salvarsan upon the spirochætæ is wholly a direct one, and upon the other phases an indirect one.

Mode of Action of Salvarsan.

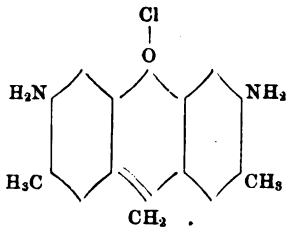
The question might now very naturally be asked, if the action of salvarsan is an indirect one, why arsenic should be more active than mercury, since under ordinary circumstances the latter is a more powerful antisyphilitic remedy. In my opinion, arsenic acts as a catalyst—i.e., it accelerates a reaction going on spontaneously, but more slowly without its assistance. Mercury possibly acts in the same way, but in virtue of its high atomic weight, its action is more probably felt in the influence it exerts on mechanical adsorption.

A ratio exists between the intensity of action of a catalyst and the degree of the colloid state in which the catalyst is. In salvarsan the arsenic is in a colloidal state, hence its action would necessarily be greater than that of any mercurial compound which we are in the habit of using. The proof of what has been said can be found, if we compare the action that different manganese compounds have on plant oxidases. Manganese formate, for instance, has nothing like such a powerful accelerating action upon plant oxidases as manganese hydroxide. The latter is colloidal, and the former is not.

In many other synthetic organic arsenical compounds the arsenic is also in a colloidal state, but the action of the drug is very inferior to that of salvarsan. Therefore this fact at once suggests that salvarsan, when injected, becomes fixed to the substance which the arsenic is going to accelerate, and it proves that a ratio exists between the therapeutic action of a drug and the degree of its adsorbed state.

Since the "606" molecule enters into adsorption with the lipoid-globulin molecules of a syphilitic serum and of the plasma cells in a case of syphilis, it will be seen that Ehrlich's statement that the drug is parasitotropic only and not organotropic cannot hold good. For a drug to be parasitotropic it must be organotropic; indeed, its organotropic properties are far more important than its parasitotropic properties.

The importance of the two points which were brought out in Ehrlich's work can now be discussed. If there is a relationship between arsenical immunity and pyronin immunity it cannot be the arsenic to which the parasites become immune. If the formula of pyronin is studied it will be noticed that there are two amino groups. Now there are two amino groups in salvarsan, and from what has been already said it would appear to be due to these two amino groups that the drug becomes attached to the syphilitic parasites, to the plasma cells, and to the lipoid-globulin molecules of a syphilitic serum.



Pyronin.

In view of the fact that parasites which are salvarsan-fast are also pyronin-fast, it proves that immunity is not acquired against the arsenic, therefore the parasites cannot be strictly said to be arsenic-fast. So far as future experimental work is concerned, it is a very important fact to have in front of one—namely, that an immunity cannot be produced against a catalyst. The fact that salvarsan can become attached to parasites, and yet not be fatal to them, is an observation in which there is a great deal wrapped up. It must be observed that such an adsorption could only have been proved by experiments conducted *in vitro*.

During the time when I was working at the rationale of the Wassermann reaction I thought that for adsorption to take place between two molecules, both of which possessed amino groups, it was necessary that they should have homologous stereo-chemical molecular configurations. This idea soon proved to be wrong, when fixation occurred between both a non-specific antigen and an antigen whose amino groups had been converted into methylene-imino groups by formalin, and the reagin or the lipoid-globulin molecules of the serum (antibody) from a case of syphilis. As a result of further experiments I proved that the complement-fixation test, as applied to syphilis, in contradistinction to the true bacterial complement-fixation tests, depended not upon the molecules having a homologous stereo-chemical molecular configuration, but solely upon their number and size.

Application of this to the action of salvarsan and of the other synthetic compounds confirms the points just mentioned. The attachment of these compounds to the syphilitic parasites, to the plasma cells, and to the lipoid-globulin molecules in a case of syphilis, cannot possibly be due to an homologous stereo-chemical molecular configuration between the adsorbed molecules, since, for one thing alone, the synthetic compounds are optically inactive bodies.

The adsorptive capacity as a whole appears to be greater in the case of a syphilitic serum than in the case of a serum from any bacterial disease, and it appears to be greater the later the case of syphilis. As the lipoid-globulin molecules from a late case of syphilis are richer in carboxyl groups than those from an early case of syphilis, it follows that any substance they happen to adsorb will tend to break down the molecules. The first action of breaking down the lipoid-globulin molecules is to increase the area over which they can work; hence the probable reason why late syphilitic lesions disappear more quickly under treatment than do early ones. In my opinion, in the case of syphilis, and in all protozoal diseases, the lipoid-globulin molecules appear to be bigger, and to have a greater adsorptive capacity than the lipoid-globulin molecules in the serum of bacterial diseases. I do not wish to infer that there is a hard-and-fast line between protozoal and bacterial diseases, since in chronic bacterial diseases the lipoid-globulin molecules of the serum approach in their action to those in protozoal diseases, since the continued use of oxidising and especially of reducing agents has a marked remedial effect. I need only refer to the use of iodine and intramine in tuberculosis, chronic ulcus molle, and chronic gonorrhœa.

The bigger the size of the molecule, and the greater its adsorptive capacity, the more easily will a drug like salvarsan be adsorbed, and the more readily the adsorbed compound will break down. When the lipoid-globulin molecules first break down, the area of their action is widened, hence the catalytic action of the arsenic will have its fullest play. If salvarsan became attached to small molecules the adsorbed compound would not break down; at all events, not until much later than it does in the case of syphilis. Moreover, as much of the arsenic compound would not be adsorbed, this would mean that the arsenic would get little chance of acting as a catalyst. Therefore, salvarsan seems to act especially in protozoal diseases because of the physical state of the lipoid-globulin molecules of the serum, and it fails to act as a bactericidal agent, because the lipoid-globulin molecules in the serum of bacterial diseases do not possess the requisite physical properties. From the fact that Ehrlich noticed that it was only such organisms as the spirochæta pallida, the spirillum of recurrent fever, and the trypanosome which were killed by the action of salvarsan *in vitro*, two conclusions are to be deduced: (1) that the spirillum of recurrent fever and the trypanosome are killed directly because of the free hydroxyl groups their molecules contain; (2) that the trypanosome cannot be the sole cause of sleeping sickness.

To sum up the points which stand out, we can, in short, say that strongly adsorbed metallic and non-metallic compounds become attached to the lipoid-globulin molecules of the syphilitic parasite, the plasma cells, and the serum by virtue of their amino groups and of the peculiar physical properties of the protozoal lipoid-globulin molecules. The metallic compounds attack those phases of the leucocytozoon syphilidis in which reaction is most marked, especially the spirochætal phase, in virtue of its free hydroxyl groups.

Both metals and non-metals act as catalysts—that is to say, they accelerate the complementary or oxidase-reducase action of the lipoid-globulin molecules of the serum and of the plasma cells by increasing directly and indirectly the supply of active oxygen, which is necessary for the action of adsorption—a chemico-physical action which destroys the parasites.

Chemistry of the Arsenical Compounds.

As the chemistry of the arsenical compounds is well known, and as I have other and more important points to discuss, I will pass over the main part of this subject.

If salvarsan is compared with atoxyl and arsacetin it will be seen that in salvarsan the arsenic is tri-valent, while in atoxyl and arsacetin the arsenic is penta-valent. Arsenic in a penta-valent state is less active in exerting its therapeutic influence on protozoa than when it is in a tri-valent

state. This is due to the fact that, in a molecule in which all the valencies are satisfied, the influence desired is less likely to act than when some of the valencies are not satisfied. In this connexion Hardy's rule is an important one to bear in mind—viz., that the precipitating power of an electrolyte depends upon the valency of the ion. From this it is clear that no compound of a uni-valent ion would be likely to have a therapeutic action at all akin to that of salvarsan. Therefore, so far as future research is concerned, the element must at least be a di-, or, better, a tri-valent ion.

Apart from mere valency, two other important considerations present themselves: (1) the degree of adsorption of the compound; (2) the atomic weight of the element. Ishizaka made the important observation that a strongly adsorbed organic anion, such as salicylic acid, was more powerful in precipitating aluminium hydroxide than a weakly adsorbed uni-valent inorganic ion. Hence, to obtain the best therapeutic action with the compound, we see that it must be organic, and the more strongly adsorbed it is the better, the reason being that a ratio exists between the strength of adsorption of the compound and the power it has in diminishing the mechanical surface energy.

It is now clear why salvarsan should be so much more effective that arseno-phenyl-glycine, arsacetin, or atoxyl. Freundlich and Schucht found that, in the precipitation of a negative colloid by kations, those of the heavy metals and of organic bases were more active than would be expected from their valency, and that this was to be accounted for by the fact of their great mechanical adsorption. This observation shows us, then, not only why mercury should be useful in syphilis, but also why it should be toxic. Owing to the great mechanical adsorption exerted by the heavy metals, it is at once obvious that strongly adsorbed organic compounds of them would be too toxic for injection.

Studying the rationale of chemotherapy in this way, one may be saved from doing an amount of useless experimental work by excluding all uni-valent and di-valent elements and all those elements which have high atomic weights. Seeing that arsenic, a tri-valent element in the form of a di-oxy-di-amino-benzene compound, may be toxic, the atomic weight being only 75, and that the corresponding compound of antimony, di-oxy-di-amino-stibino-benzene, is more toxic still, the difference in the atomic weight being only (120 − 75 =) 45, it is perfectly clear that if we wish to find a non-toxic compound we shall have to seek for elements which are tri-valent with a smaller atomic weight. Before mentioning the elements I tried there are one or two other points to be considered.

Di-oxy-di-amino-stibino-benzene, according to Hügel, is not only more toxic than its corresponding arsenic compound, but its therapeutic action is infinitely less. Comparing the two bodies, we find that the arsenic in salvarsan is both metallic and non-metallic, while in the antimony compound just mentioned the antimony is entirely metallic. It therefore struck me that a less metallic element than arsenic might prove to be its therapeutic superior; in any case the probability was great that it would be considerably less toxic. Salvarsan is a strong oxidising body; indeed, its arsenic acts catalytically, as a peroxidase, but at the same time it is a reducing agent, although its properties in this direction are probably not made use of in the body. This led me to think that a similar body to salvarsan, which had stronger reducing properties, would probably do just what salvarsan failed to do.

I wanted, then, an element which had the following properties: (1) of more than one valency; (2) an atomic weight of less than 75; (3) a non-metal; (4) a reducing agent. Only two elements occurred to me which would fulfil these conditions, and those were phosphorus and sulphur. I discarded phosphorus, owing to the fact that it can produce very toxic symptoms, such as fatty degeneration of the liver, so I conducted experiments with sulphur and succeeded in making a compound which has in some respects a more powerful therapeutic action than that of salvarsan. I prepared several compounds, but soon found that one was much superior to the others, and this one was di-ortho-amino-thio-benzene, or "intramine," as it is commercially called.

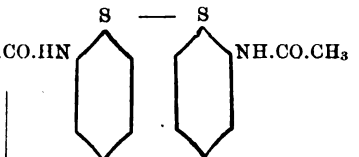
Further research showed me that it was highly probable that other metallic compounds could be found, which would prove to be as efficacious as and less toxic than salvarsan. Seeing that the metal must be tri-valent and not of high atomic weight, I began to experiment with iron, manganese, and aluminium. In a short time I was able to prepare some compounds of iron and aluminium, which turned out to be non-toxic and to have, if used in sufficient doses, as good as if not better therapeutic action than salvarsan.

NEW SYNTHETIC ANTISYPHILITIC DRUGS.

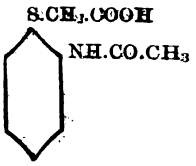
I will only briefly touch upon the drugs I have prepared, as I am anxious to give a short account of the practical value of my researches.

Non-Metallic Compounds (Sulphur).

I prepared two basic and two acid compounds. The first acid compound was the acetyl derivative of di-ortho-amino-thio-benzene, and the second acid compound was the condensation product of the base with mono-chloracetic acid.

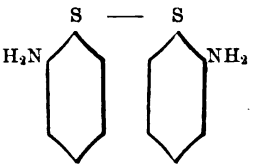


Acetyl derivative of intramine.

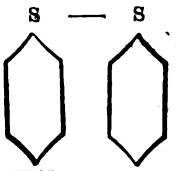


Condensation product with mono-chloracetic acid.

These two products may be quickly dismissed, as both were extremely painful when injected intramuscularly, and their therapeutic action was practically nil, which was to be expected since the amino groups have been interfered with. The two basic compounds prepared were di-para-amino-thio-benzene and di-ortho-amino-thio-benzene. As the therapeutic action of the former was not as good as that of the latter it was discarded.



Di-ortho-amino-thio-benzene (intramine).



Di-para-amino-thio-benzene.

Intramine can be prepared as a mass which goes into a fine amorphous powder when dried, or as crystals; both are light yellow in colour with a greenish tint. Intramine is absolutely non-toxic, consequently any dose may be employed, and it may be repeated as often as is thought necessary. The usual dose I employ for an adult is 1 gm., this quantity being suspended in 9 c.c. olive oil or liquid paraffin, and injected intramuscularly. Intramine does not oxidise on exposure to air, therefore the unused contents of a phial need not be thrown away, and a wide-mouthed bottle containing several grammes may be kept and used like mercurial cream.

When compared with salvarsan I soon found that in the primary and generalisation stages salvarsan was superior to intramine, but that in the recurrent stages the opposite was the case. Further experiments showed me that in the early stages of syphilis previous administration of a metallic compound greatly increased the action of intramine, but that in the recurrent and late stages intramine increased the action of the metallic compounds.

When I came to realise that metals acted as oxidising agents and non-metals as reducing agents—a realisation fully justified when I found that salvarsan was better in early syphilis and that intramine was better in late syphilis, oxidation being more marked than reduction in the former, and *vice versa* in the latter—I tried other metallic compounds to see how their therapeutic action compared with that of salvarsan. The two metallic compounds used were the hydroxides of aluminium and iron. As both these hydroxides are suspensoid colloids, and therefore cannot be injected intravenously without producing anaphylactic shock, unless calcium chloride is injected beforehand or the animal is anæsthetised with ether, &c., it was necessary to convert them into emulsion colloids, which I did with glycine, albumin, or gelatin. Injected intravenously into human beings as emulsoids, both the hydroxides of iron and

aluminium caused an amelioration of the symptoms in cases of early syphilis, and enhanced the value of intramine injected afterwards, but they did not prove so valuable as salvarsan. This result was to be expected, since these hydroxides are not powerfully adsorbed bodies like salvarsan and intramine. Although when converted into emulsoid colloids with glycine, albumin, or gelatin, amino groups exist in the compound, there is no powerful adsorption between the metal and the amino groups as there is in salvarsan and intramine.

Mode of Action of Intramine.

Before describing the metallic compounds I prepared it will be as well to dilate further upon the mode of action of intramine. Having already made several allusions to the *modus operandi* of intramine, to save recapitulation I will begin with its action in the oxidase-reducase system. The oxidase-reducase system can be expressed in short as the hydroxyl-hydrogen system of the internal phase. On to the hydroxyl group the metallic ion becomes attached; normally the metal is iron; when salvarsan is injected it is arsenic, &c. This metallic hydroxide combines with hydrogen ions and hydroxyl ions in the form of hydrogen peroxide to form active oxygen, as per following equation:—

$$R.Fe.(OH)_3 + 5H + 2H_2O_2 = R.Fe + 6H_2O + O''$$

The iron-protein, which is formed as the result of the reaction, soon becomes reconverted into iron hydroxide-protein, as in the following equation:—

$$R.Fe + 4H_2O = R.Fe(OH)_3 + 4H + OH.$$

When intramine gets into the body the compound presumably breaks down at the link between the two sulphur atoms. The sulphur then forms di-sulphide-protein, which reacts with the hydrogen and hydroxyl ions of the external phase to form sulphur-protein, mercaptan-protein, hydroxyl ions in the form of hydrogen peroxide and active hydrogen, as per this equation:—

$$R.S.S.R. + 2H + 4OH = R.S. + R.SH + 2H_2O_2 + H\cdot$$

In this way two molecules of peroxide hydrogen are formed, exactly the amount required for the metallic hydroxide to act upon, to form active oxygen. Metals, then, form active oxygen directly, and non-metals indirectly. The mercaptan-protein is able to combine with any free sulphur, to form hydrogen sulphide and di-sulphide-protein, as in the following equation:—

$$2R.SH + S = H_2S + R.S.S.R.$$

The mercaptan-protein is also able to combine with any free oxygen, to form water and di-sulphide-protein, as in this equation:—

$$2R.SH + O = R.S.S.R. + H_2O$$

That the above is quite logical follows from the relationship between oxygen and sulphur, as shown in such compounds as cyanates: thio-cyanates (R.CNO:R.CNS), and urea: thio-urea.

$$CO\begin{matrix}NH_2\\NH_2\end{matrix} \qquad CS\begin{matrix}NH_2\\NH_2\end{matrix}$$

Adding the knowledge just obtained to that gained by clinical observation, further light is thrown upon the affinity of mercaptan-protein for oxygen. If the mercaptan group becomes oxidised by the active oxygen present there will be less active oxygen resulting from the oxidising action of the metallic hydroxide; hence, if intramine is given first and salvarsan afterwards in early syphilis, when the greatest quantity of active oxygen is present, one would expect that those phases of the leucocytozoon syphilidis which are most easily killed by oxidation would be able to flourish, that the customary therapeutic action of salvarsan would not be witnessed, and that the symptoms might even be temporarily aggravated. This is exactly what happens clinically. The spirochætæ are not killed quickly by intramine, and if salvarsan is given directly afterwards it appears to have no immediate influence on the symptoms.

If the metallic compounds are allowed their full play first, as the catalysts of the oxidase system, the introduction subsequently of a strong reducing agent like intramine would, in virtue of its action, set free sufficient peroxide to be subsequently converted into active oxygen by the metallic compounds, thereby preventing the adverse action of the mercaptan-protein. If this is so, one would expect that the phases of the leucocytozoon syphilidis would be quickly vanquished, and that the symptoms of the disease would rapidly disappear. Once again this is exactly what happens clinically. If metallic compounds be first administered in early syphilis the spirochætæ are killed at once and the symptoms improve. If intramine be now injected the other phases are killed immediately, and the symptoms vanish at a very much quicker rate than they otherwise would have done. I need only cite one case to show the truth of this.

A patient had a typical Hunterian chancre in the corona there was a moderate loss of surface, and the sore was markedly indurated. I gave an intravenous injection of galyl (40 cg.), and three days later an intramuscular injection of intramine (3 gm.). There was practically no change in the chancre when the intramine was given, but a few days later not only had the sore completely healed but the induration had entirely vanished.

I have seen severe papular syphilides scarcely influenced by galyl alone, as the following case shows, disappear in a few days when intramine was injected.

The patient had a primary sore in the corona, hard infiltrative œdema of the whole of the penis, and a generalised papular syphilitic eruption. No improvement followed three intravenous injections of galyl: instead more papules appeared. Within ten days after one injection of intramine every lesion had vanished.

In the recurrent and late stages of syphilis the exact opposite to what has just been said would be expected, since in these stages the reducing action of the resisting substance is more powerful than the oxidising action. One case again will suffice to prove this.

A patient had a gumma which encircled the corona and spread on the under surface of the penis on to the scrotum. In less than one week, after receiving only one intramuscular injection of intramine (2 gm.), the ulceration had completely healed. If this case had been treated with salvarsan alone it would have taken about three weeks for the sores to have healed up, and during this time it would have been necessary to have given two or three intravenous injections.

I have treated with immediate success by intramine late syphilitic lesions which had remained practically uninfluenced by salvarsan with mercury and iodides subsequently. I must cite a case which bears this out to the letter.

A man, 70 years of age, had had syphilitic glossitis for 25 years. Eighteen months before he was given intramine he had two intravenous injections of salvarsan, and these were followed by three courses of mercury and iodides, with practically no improvement in the clinical condition. When an intramuscular injection of intramine was prescribed (2 gm.) the tongue exhibited the following features. There was an ulcer in the centre about the size of a sixpence, with a lateral fissure running from it on both sides. Just posterior to the ulcer a hard wart was situated. The movements of the tongue were impeded and very painful. In a few weeks after the injection the ulcer had completely healed, the fissures and wart had vanished, the natural movements of the tongue and its suppleness had returned, and in the words of the patient, "My tongue has never been so well as long as I can remember."

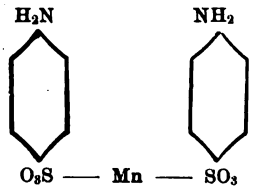
METALLIC COMPOUNDS.

Manganese.

In view of the experimental work which had been done in connexion with the activation of oxygen by manganese hydroxide, I tried to see what effect adsorbed colloidal compounds of manganese would have in syphilis. As the atomic weight of manganese is only 20 below that of arsenic (As = 74·96, Mn = 54 93), the therapeutic effect to be obtained from the use of the former would, on *a priori* grounds, be less than that from the use of the latter. On the other hand, it was possible that, if manganese proved less toxic than arsenic, the loss of action might be compensated by using a greater quantity of the drug. Further work showed me that, if one metallic drug was less potent than another, the same therapeutic effect might be obtained by using a greater quantity of the former, but that there was no direct proportionality between the quantity used and the effect produced. This is an extremely important point, as it shows that the metals, and, for that matter, the non-metal sulphur, as in intramine, are catalysts.

As intramine is a drug which is best administered intramuscularly, I thought it would be better, if possible, to prepare soluble compounds of the metals so that they could be injected intravenously. To prepare soluble compounds I thought metallic compounds of sulphanilic acid would be the easiest to manufacture, in view of the difficulties which are presented by the ortho-amino-benzene

compounds, consequently the first manganese preparation made was di-para-amino-benzene-manganese sulphonate.



Di-para-amino-benzene-manganese sulphonate.

Di-para-amino-benzene-manganese sulphonate forms a claret-coloured solution in water, it is acid, and is readily broken down on the addition of an alkali. When injected intravenously into rabbits, the animals die almost instantaneously from anaphylactic shock. The excess of hydroxyl ions in the blood doubtless breaks the compound down at once and forms manganese oxy-hydroxide ($MnO_2(OH)_2$).

$$Mn + 2OH + 2O = MnO_2(OH)_2.$$

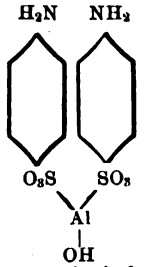
It will be noticed in the equation that two atoms of oxygen are used up; therefore, not only is the metal not acting as an oxidising agent, but it is increasing the hydrogen-ion concentration, with the result that the animal dies at once. To avoid this it is necessary to prepare the tri-para-body, so that the moment the manganese became free, it could combine with three hydroxyl atoms to form manganese hydroxide ($Mn(OH)_3$), but, unfortunately, the tri-valent compounds of manganese are so very unstable.

Aluminium.

Aluminium struck me as a useful metal to experiment with, as it can only form tri-valent compounds. Although its atomic weight is low, only 27, I nevertheless thought I might be able, if its compounds proved non-toxic, to achieve good results, by using very big doses. Aluminium is well known as an oxidising metal; Gessard showed that the red oxidation product which results from the action of tyrosinase on tyrosine may be quickly converted into the black melanin by salts of aluminium. Bach also showed that aluminium had the action of converting the oxidation product which results from the action of phenolase on pyrogallol into purpurogallin.

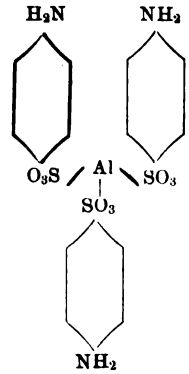
In passing, it might be interesting to note that melanin, the pigment in the epidermis, is formed by the action of tyrosinase on tyrosine. This action is an oxidase reaction, and it is an action which is increased by metals. Syphilitic lesions, especially when they have been treated with arsenic, are very apt to leave pigment stains behind them, showing that the oxidase reaction is very marked in such lesions and that it is increased by metals. This simple observation goes far to prove my theory that the syphilitic parasites are destroyed indirectly by oxidation, and that arsenic and some other metals act in virtue of their oxidising action.

The aluminium bodies prepared were the di-para-amino-hydroxy-benzene-aluminium sulphonate and the tri-para-amino-benzene-aluminium sulphonate, the formulæ of which are as follows:—



Di-para-amino-hydroxy-benzene-aluminium sulphonate.

Tri-para-amino-benzene-aluminium sulphonate, or, as it is commercially called, "Aluvine," is a crystalline body, soluble in water, in which it forms a colourless solution. Aluvine is acid and readily breaks down on the addition of an alkali; therefore, when it is injected intravenously some of the metal quickly combines with three hydroxyl atoms, to form aluminium hydroxide. If a syringe is used for giving the injection, the blood which enters the syringe quickly forms a flocculent precipitate, which is, in part, the metallic hydroxide. The observer might be alarmed at injecting such into the vein, but as it is an emulso-suspensoid, it is perfectly safe. The method of injecting fluids intravenously is so much better than allowing the solution to enter by gravity, because if a suspensoid is present in the solution, the blood which enters the syringe will quickly give it an emulsoid coating. I am of the opinion that the reason why I have had so little trouble with the thousands of intravenous injections which I have given is due to the fact that I use a syringe.

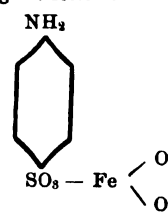


Tri-para-amino-benzenealuminium-sulphonate.

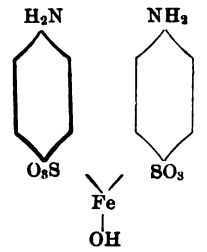
If properly prepared, the aluminium compounds, of which the tri-para body appears to be the better, are absolutely non-toxic, and, as far as I have been able to determine, any dose may be given, and it may be repeated as often as is desired. Patients can be treated as out-patients because no immediate or late manifestations arise. The first dose does not, as a rule, make much difference to the lesions, but within a few days after the second they quickly disappear.

Iron.

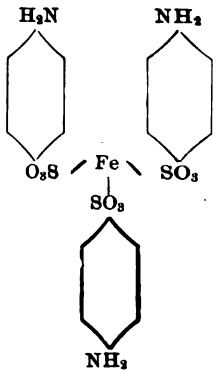
As iron seemed to me to be the natural peroxidase, and having obtained such good results with intramine, a drug which increases the natural perhydridase, I anticipated equally good results from the use of an adsorbed iron compound. The iron bodies prepared were the para-amino-di-hydroxy-benzene-ferric sulphonate, the di-para-amino-hydroxy-benzene-ferric sulphonate, and the tri-para-amino-benzene ferric sulphonate, the formulæ of which are as follows:—



Para-amino-di-hydroxy-benzene-ferric sulphonate.



Di-para amino-hydroxy-benzene-ferric sulphonate.



Tri-para-amino-benzene-ferric sulphonate.

Tri-para-amino-benzene-ferric sulphonate, or, as it is commercially called, "Ferrivine," is a scaly crystalline substance, soluble in water, in which it forms a red solution. Ferrivine, like aluvine, is stable; it does not oxidise on exposure to air; it is acid, and therefore quickly becomes converted into the hydroxide when it comes in contact with the alkaline serum. Ferrivine is absolutely non-toxic and the same doses can be used as are advised for aluvine—e.g., 1–3 gm.

METHODS OF TREATMENT.

It would be as well now to give a sketch of the clinical value of these new drugs, and how they should be used with the already known remedies in the treatment of syphilis.

Aluvine and ferrivine act like salvarsan, in some cases with not only greater rapidity, but more effectually, in others not so well. Generally speaking, the symptoms of primary and generalised syphilis disappear within four days after the second intravenous injection. Induration in chancres and those dense, infiltrated, brownish papules are not quite as resistant to aluvine and ferrivine as they are to salvarsan; but if intramine be prescribed after the second injection, the hardest induration and the most resistant papule will have vanished inside of a fortnight. I had a case of generalised syphilis in which the papules not only did not move under galyl, but more appeared while the arsenical preparation, mercury and iodides, were being administered. Five days after an injection of intramine every papule had vanished.

In the recurrent and late stages of syphilis intramine should always be prescribed first, when the symptoms vanish in a few days. In cases of cerebro-spinal meningitis the pains disappear within 24 hours; in degenerative myelitis the subjective symptoms are often improved, and I have also seen considerable benefit follow intramine in cases of

degenerative encephalitis. I will describe a case of degenerative encephalitis treated with intramine, as it shows so well what can be done by combining reducing and oxidising remedies.

The patient was suffering from the depressive type of degenerative encephalitis; he showed no change of facial expression, would not speak, he had no control over his sphincters, and was at times violent. I prescribed two intramuscular injections of intramine, with the most extraordinary improvement—facial expression returned within a few days and the patient entered into conversation. Hoping that the condition might be still further improved, a third injection was given, with the result that the patient became worse than he had ever been. I had suggested that after the second injection of intramine a metallic compound should be administered, but as the medical man in attendance wished to see what intramine alone would do it was not prescribed. Seeing that the patient had become worse after the third injection, which was what I expected, I hazarded the opinion that if a metallic compound was given now his improvement would be sudden and greater than on the first occasion. An intravenous injection of galyl was administered, with the result that in 48 hours' time the patient became a rational individual. For how long the improvement is going to be maintained I cannot say, but this case is especially interesting to me as a proof of my theory of oxidation and reduction.

As the maximum therapeutic action is obtained in early syphilis if intramine follows the administration of aluvine or ferrivine, likewise is it the case if in late syphilis one or other of the metallic compounds follows intramine. I have treated some cases of cerebro-spinal meningitis with first an intramuscular injection of intramine, then with two intravenous injections of a metallic compound, and, finally, with mercury and iodides, with the very greatest success—so much so that I think such patients are better advised to have the treatment just outlined in preference to intraspinal injections of salvarsanised serum. Owing to the non-toxicity of intramine, aluvine, and ferrivine, serum withdrawn after their administration and injected intraspinally has a most beneficial influence upon central nervous lesions far superior to that of salvarsanised serum, and, moreover, no toxic symptoms occur, as are too often witnessed when galyl and the other arsenical substitutes are used. The following case is one in point:—

A man, aged 34, came to me complaining of double vision. He had contracted syphilis five years previously, and had been treated thoroughly with mercurial inunctions and injections before the symptoms of the generalisation stage manifested themselves. The patient had also had nine intravenous injections of salvarsan at various periods, but had never had another symptom of syphilis. On examination I found that there was a unilateral partial third-nerve paralysis, the pupils were unequal, and the reflexes were sluggish. The patient had no knee-jerks, and there were areas of diminished tactile sensation. I elicited from the patient that he had lost much weight, and that all sexual desire had vanished in the last few months. I gave three intramuscular injections of intramine, and alternated them with three intravenous injections of aluvine. After each injection I gave an intraspinal injection of the prepared serum. The cerebro-spinal fluid when first examined exhibited the typical features of degenerative myelitis, after the fifth injection it was practically normal, and by this time all the objective and subjective symptoms had vanished. The double vision disappeared after the first injection of intramine, showing clearly that the cranial-nerve lesions in degenerative myelitis must be of meningeal origin, commencing in the meninges covering the nuclei in the base of the brain.

The introduction of a reducing agent like intramine into our therapeutic armamentarium is going to have not only a very marked effect in combating syphilitic lesions, but also lesions of possibly all chronic infections. The following case will show its influence in the former:—

A medical man, aged 42, contracted a digital chancre nine months ago. In all, he had seven intravenous injections of neosalvarsan and galyl, the last two injections of galyl being given after the appearance of a big recurrent syphilitic ulceration of the right tonsil, but without any therapeutic action. The patient had taken some mercury, but rather irregularly. I gave an intramuscular injection of intramine; in a few hours the subjective symptoms in the throat vanished, and by the fourth day it would have been difficult to say that the tonsil had been ulcerated. The improvement in the general health was just as remarkable.

Cases of lupus which Dr. H. G. Adamson has treated with intramine, upon which a report will appear shortly, show its influence in the latter. I have also had some success with intramine in the treatment of chronic cases of gonorrhœa. The future alone will show what effect these new drugs are going to have upon the cure of syphilis and upon the incidence of recurrences; therefore there is no point in discussing this problem now.

Two Important Questions.

In outlining the treatment I now adopt in the various stages of syphilis there are two very important questions which arise, the correct answers to which it is necessary to find, in order that we may treat our patients in the best way possible.

1. Assuming that in the doses given the oxidising effect of salvarsan, aluvine and ferrivine are equal, is that effect going to be enhanced by giving an injection of each, or is the effect going to be the same if three injections of any one are prescribed? Theoretically, I should doubt whether any difference in effect would be produced, but whether this is the case practically remains to be seen—a point by no means easy to determine.

2. If we fail in curing a case of syphilis at once are we right in continuing treatment after the disappearance of the symptoms, or might it not be better for the patient to be treated symptomatically only? The syphilitic parasites are attacked first and foremost by the resisting substance—i.e., the lipoid-globulin molecules in the serum. The resisting substance has an oxidising and reducing action, actions which we increase by salvarsan, aluvine, and ferrivine, on the one hand, and by intramine and iodine on the other. An increase in size of the lipoid-globulin molecules, produced by the administration of the synthetic remedies just mentioned, results in a breaking down of the molecules, with ultimately a diminution in the amount of the resisting substance.

The properties of the resisting substance may be lessened, not only to below those of the resisting substance in bacterial diseases, but also to below those of the normal resisting substance. Therefore the continued administration of powerful oxidising and reducing remedies might possibly be expected to result in so little of the compound being adsorbed that their oxidising and reducing actions would be reduced to perhaps nil. Knowing that both oxidation and reduction are catalytic reactions, it might theoretically be possible that only the minutest traces of the metallic hydroxide and the di-sulphide are necessary to continue the good work. Since mercury acts mechanically and probably not as a peroxidase at all, and considering that its action is entirely dependent upon the size and adsorptive capacity of the lipoid-globulin molecules, it might again theoretically be assumed that the administration of mercury, once the properties of the resisting substance have been reduced, would be entirely superfluous.

Ever since the advent of salvarsan I have been struck by the enormous increase of cases of meningeal syphilis and the very frequent occurrence of lesions, in spite of the fact that the patient was well under the influence of mercury. I have also seen many cases in the latent stage precipitated into a condition of degenerative myelitis and degenerative encephalitis by the administration of our powerful remedies. So far as dealing with patients in the latent stage is concerned, I have for some time made up my mind never to prescribe treatment if I found no symptom after a thorough clinical examination. I have also long since made up my mind to treat symptomatically only those patients who have once entered the recurrent stage, but as to how a case in the generalisation stage should be best treated a little further discussion is necessary.

Treatment in the Generalisation Stage.

To make the subject clear I will picture the body as consisting of two parts: (1) the systemic part; (2) the nervous. The nervous part is largely dependent upon the systemic part for its resisting substance.

If the resisting substance in the systemic part has been reduced by treatment, spores which are resistant to treatment may be possibly prevented from developing if small doses of the remedy are continually being prescribed. The rule is far from being invariable. Against this one must consider the frequency of recurrences when mercury and iodides are not prescribed after a course of several injections of salvarsan, and how the protective action of mercury and iodides compares with that of the resisting substance when working alone

Systemic recurrences are far more common when salvarsan is not followed by mercury and iodides, but the frequency of the same, and as to when they appear, depend upon the number of injections given. If three or less injections of salvarsan are given the recurrences are more frequent than when six or more injections are given in one course of treatment, but they appear much later. Usually 12 or 18 months have elapsed before they make their appearance, while after a course of several injections a recurrence may appear in two or three months. Unless the individual has the opportunity of observing many cases, this somewhat paradoxical result might easily lead to false conclusions being made.

The explanation of this disparity as to the time at which the recurrences appear is as follows. When three injections of salvarsan are prescribed the resisting substance is scarcely reduced, with the result that it continues exerting its power until the parasites ultimately get the upper hand, which is hardly ever under 12 months. When several injections have been administered, the resisting substance is so reduced that the spores which have not been killed by the treatment will be able to develop on a soil which to them is the same as a new soil; consequently, symptoms will appear after the usual incubation period; therefore, two or three months later.

The early syphilitic lesions are far less dangerous and cause much less local damage than late syphilitic lesions, hence the systemic recurrences after a course of several injections are preferable to those which occur when only three injections have been given, since the former produce fewer degenerative changes, especially in the vessels, which in most lesions are primarily attacked. Therefore a course of several injections produces better results than a course of a few injections, and since the recurrences after both are fewer in number when the injections are followed by mercury and iodides, these two drugs should not be omitted in the treatment of syphilis.

As mercury and iodides can have such an infinitesimal action when the resisting substance is reduced, might it not be better for the patient after a course of several injections to wait 8 to 12 weeks before taking mercury? Eight to 12 weeks is about the time the resisting substance takes to get back to its normal state. Now mercury and iodides have nothing like the influence in altering the state of the resisting substance that the strongly adsorbed compounds have, and since both may have some power in preventing the spore from developing, it would seem wiser to allow no interval to elapse between stopping the salvarsan and commencing the mercury. As to whether mercury should be given continuously or intermittently, does not, I think, matter much. As mercury in the form of injections is more powerful than when taken per os, from the patient's point of view the intermittent treatment is the only one which is practicable.

A question which is impossible to answer is, How long should the mercurial treatment be maintained? A correct answer could only be given if we knew that a spore would not develop if it had been dormant for a certain number of years. As we know that spores may re-develop years after they have been quiescent, we are obliged to let our clinical experience guide us, and to give that amount of treatment which we have found in the majority of cases to be sufficient and that is, roughly, one year's treatment when the case of syphilis is in the primary stage, and two years' treatment in the generalisation stage.

Owing to the fact that the nervous part is dependent for its protective substance upon the systemic part, it will be readily understood that if the organisms have reached the nervous part before treatment has commenced they will be able to develop therein the more readily the quicker the resisting substance in the systemic part has been reduced. It will follow, therefore, that the incidence of cerebro-spinal meningitis will be greater when many injections of salvarsan than when a few have been prescribed. Cerebro-spinal meningitis is a curable condition and, moreover, its occurrence practically precludes the patient from getting a degenerative lesion later.

Now let us consider what happens to the nervous part if only a few injections of salvarsan are administered. The resisting substance is not strong enough to kill the parasites, but strong enough to prevent them developing sufficiently to produce symptoms. In this state the spores can migrate and do migrate into nerve tissue proper, where they meet with still less resistance, with the result that now any symptoms which appear will be degenerative in character, and, therefore, more or less incurable. Once again we see that a course of several injections is preferable to a course of only a few.

The onset of nervous lesions is naturally dependent upon the number of organisms that reach the meninges before treatment is begun. Cerebro-spinal meningitis is much more common in patients who have severe generalised symptoms than in those in which the so-called "secondaries" are slight. For all practical purposes it may be said that a ratio exists between the severity of the early cutaneous eruptions and the occurrence of early cerebro-spinal meningitis. As the symptoms of cerebro-spinal meningitis almost invariably occur between 8 and 12 weeks after the last injection of salvarsan, it is wise to give every patient in the generalisation stage an extra course of powerful treatment round about this time.

Outline of Treatment in Various Stages.

What effect the introduction of intramine is going to have upon the points just raised I am not in a position yet to say, but one thing is clear—namely, that the administration of intramine reduces the number of the long course of the metallic compounds by about half, and increases the result produced.

As iodides increase the action of intramine, possibly owing to the fact that the mercaptan-protein will react with iodine as it does with oxygen, thereby saving the free oxygen which is so necessary, and with the result that the iodine conveys it back into di-sulphide protein, I now often prescribe iodides one week before and one week after any big dose of intramine is going to be administered. The equation of the interaction is probably as follows:—

$$2R.SH + 2I = R.S.S.R. + 2HI.$$

Furthermore, iodine acts as an indirect oxidising agent, because it has the power of forming peroxide for the oxidase system, as per following equation:—

$$4I + 5H + 4OH = 4HI + 2H_2O_2 + H.$$

In the primary stage I order 30–60 gr. of potassium iodide to be taken daily, and inject intravenously a large dose of a metallic compound. Three days later I give an intramuscular injection of intramine (1–2 gm.), and between the fourth and seventh days after I inject intravenously another maximum dose of a metallic compound, and continue mercury, intramine, and iodides for one year as follows: 1. Eight fortnightly intramuscular injections of grey oil, 2–3 gr. of Hg. 2. Eight fortnightly intramuscular injections of intramine, 1–3 c.c. Mercury and intramine alternately. 3. One month in every three iodides should be given internally. The first month of iodides should be commenced after four doses each of mercury and intramine have been injected. 4. One month's rest should follow every eight injections each of mercury and intramine.

In the generalisation stage I order iodides at once, and prescribe two intravenous injections of a metallic compound both before and after one or two intramuscular injections of intramine, allowing four days to intervene between each intravenous injection. I then give four courses of the mixed mercury, intramine, and iodide treatment, and two months after the last intravenous injection I inject intravenously a maximum dose of a metallic compound before and after a large intramuscular injection of intramine, as outlined in the primary stage.

In all recurrent and late cases I first of all give one or two intramuscular injections of intramine, then one or two intravenous injections of a metallic compound, and follow up the same with one course of the mixed treatment. This treatment will also do for cases of non-degenerative meningo-encephalitis and myelitis.

In cases of degenerative encephalitis and myelitis in which more drastic treatment might be expected to give more satisfactory results I give the following:—1. An intramuscular injection of intramine 2. Four days later an intraspinal injection of prepared serum which has been drawn off on the third day. 3. Three or four days later an intravenous injection of a metallic compound. The metallic compound should not be galyl, kharsivan, neo-kharsivan, or any of the other French substitution-products for salvarsan, as they are too toxic. 4. Three days later an intraspinal injection of prepared serum, which has been collected the day before. The injections of the non-metallic and metallic compounds should

be continued alternately, until the cerebro-spinal fluid is normal or approaching close thereto.

Women who are pregnant should be treated as first described under the heading of the generalisation stage, and two courses of the mixed treatment should be given without any pause in between. The extra injections at the second month are unnecessary.

Congenital syphilitics should have the mixed treatment for two years, with the exception that the mercury should be administered per os and continuously. All recurrent symptoms should be treated symptomatically and intravenous injections prescribed if practicable, as suggested in recurrent and late cases of acquired syphilis.

As intramine is a new drug, some points with regard to its administration might with advantage be given. All intramuscular injections are apt to be painful; the intensity of the pain varies with different individuals, and is mostly due to the bulk of the injection and the œdema and contraction of the muscle fibres which follow it. There are several ways in which the pain can be reduced. First and foremost, the intramine should be well warmed before it is injected. Immediately after the injection pain is experienced; this lasts for a few minutes, then vanishes, to reappear some hours later when the œdema and contraction set in. The patient should be well massaged after the injection has been given; he should walk about to aid absorption, and the moment the stiffness begins to set in he should have a very hot bath in which some soda has been dissolved. For the next two or three days the leg should be moved as much as possible, hot baths should be repeated, and the part should be well massaged. By the fourth day every trace of intramine will have vanished from the buttock, no induration will remain, and the patient should be able to move about in the normal way. There is usually a rise of temperature on the second and third days, the degree depending upon the severity of the case; the patient may perspire freely, and sometimes a few days later an erythema appears over the injected buttock, which either remains localised or spreads over the body, in every case to disappear 24 or 48 hours later. The erythema is probably due to the sulphur. However big be the dose, and however frequently it be repeated, I have never noticed any other ill-effects than those already described; therefore it may safely be assumed that intramine is an entirely innocuous drug.

CONCLUSION.

I cannot help closing my lectures with the prophecy that intramine, especially when alternated with powerfully adsorbed oxidising agents, is going to play a very important part in the treatment not only of syphilis but of all chronic infections, since it has already proved itself to be of considerable value in cases of tuberculosis and chronic gonorrhœa. It is even probable that intramine may have a place in the treatment of malignant disease.

Finally, I must express my very deepest gratitude to Mr. J. Ernest Lane for the way in which he has facilitated my work at the Lock Hospital. I must also thank Mr. J. Patterson, Mr. R. L. Mackenzie Wallis, and Dr. H. Spence, for their invaluable assistance, and the British Drug Houses, Limited, for the help given and interest taken in my work.

PETROL FOR DOCTORS IN IRELAND.—Owing to the proclamation of martial law, all the petrol in the country was commandeered by the military. As a result, medical practitioners have had to get permits from military officers to obtain petrol, and every effort has been made by the authorities to allow them as little as possible, forgetful of the fact that no profession has been doing so much war work for the country as the medical, and that many are away at present at the front. It is a great pity that the arrangements necessary to control the petrol-supply were not left in the hands of practical business men, who could appreciate the difficulties of the situation, and act accordingly.

EAST-END MOTHERS' LYING-IN HOME.—The report of this charity for the year 1915 was submitted to the annual meeting at the Home, 394–6–8, Commercial-road, Stepney, E., on May 17th. The report states that among the in-patients 549 women were delivered, 539 children being born alive. There were 15 still-births, 10 sets of twins, 5 miscarriages, 111 premature births, with deaths in 13 cases before leaving the Home. The special day and night calls attended to in the district numbered 145, and among out-patients 1166 women were delivered with 1138 infants born alive, 35 still-births, and 20 sets of twins.

NOTES ON A CASE OF SYPHILIS OF THE AORTA.

BY SIR CLIFFORD ALLBUTT, K.C.B., M.D. CANTAB., F.R.C.P. LOND.,
REGIUS PROFESSOR OF PHYSIC, UNIVERSITY OF CAMBRIDGE, ETC.

With Pathological Report by HUBERT M. TURNBULL, D.M. OXON., ETC.,
DIRECTOR, PATHOLOGICAL INSTITUTE, LONDON HOSPITAL.

ABOUT six months ago I happened to be present in Addenbrooke's Hospital at the necropsy of a man, aged 33, whose death was due to chronic syphilitic meningitis (pia-arachnitis). The Wassermann reaction had been positive. To the naked eye the thoracic and abdominal viscera seemed to be normal. The prosector (Dr. Aldren Wright) at first passed, as I did, the heart and great vessels as normal. But on concluding the inspection it occurred to us that a closer examination should be made of the aorta. The heart and the few inches of the great vessel still attached were then carefully re-examined. But again, on a cursory view, and in the fresh state, these parts seemed normal until Dr. Wright so supported them in their proper position that they could be inspected within and without; then we became aware that the first portion of the arch was a little dilated. A slight but definite, rather irregular bulging was visible within and without. When the parts collapsed this bulge was scarcely manifest; at any rate, not obvious. Furthermore, on yet closer inspection the inner coat of the vessel was seen to be not quite normal, even to the naked eye. In colour and continuity it was unaltered, but inside the dilated portion the lining membrane, over an area about the size of a shilling, seemed a little granular or finely pitted.

The arch was therefore removed and preserved, and sections of it were made. When the vessel had been stiffened by the preservative fluid the dilatation became more fixed and obvious, and on examination of these sections microscopically I was so much impressed by the appearances that—in the shorthandedness of our pathological department, and the absence of Professor G. Sims Woodhead himself on military service—I sent the sections, and afterwards the heart and portion of the aorta, to Dr. Turnbull, with whom I happened then to be in correspondence. His letters I append in full, as they illustrate, what I think we have not on record, a syphilitic aortitis caught at an early stage; or rather perhaps during a very chronic attack which, whatever its duration, had progressed very slowly. For a description of the Hodgson-Welsh aorta, afterwards described by Döhle, Heller, and others, I may venture to refer to my recent work on "Diseases of the Arteries."

In the present specimen I would draw especial attention to the entire absence of atheroma, taking this term in the sense of Jores's sub-intimal changes, with splitting of the elastica, an absence which is the more striking as in advanced cases atheroma commonly, indeed usually, supervenes, and although distinguishable from the syphilitic process blends with it. The description of the blood-vessels also is interesting. To a true hypertrophy of the intima Dr. Turnbull has drawn attention before.

From this case let us draw the lesson in all necropsies on syphilitic cases to submit the thoracic aorta, and especially the ascending arch, to minute scrutiny, to section and microscopic examination. In current necropsy work this aorta might well have passed unnoticed; and had the patient suffered from angina pectoris we should have been assured that the aorta was intact.

Pathological Report by DR. H. M. TURNBULL.

(I.)

I have examined the two transverse sections of the aorta which you sent me. I am much averse to expressing an opinion on sections which are stained by one method only, but if only one stain is employed the van Gieson method is certainly the best.

The *adventitia* is abnormally broad and dense. In one section this alteration in the adventitia contrasts sharply with the adventitia of a portion of relatively healthy aorta, at one side of the intimal thickening. In one section there is some perivascular infiltration, round a vessel which passes from the adventitia into the media.

The *media* shows extensive fibrosis, and in this respect contrasts sharply with the slight fibrosis in the relatively

healthy portion of the vessel. In part of the fibrosis the collagen fibrils are directed normally, but in the greater part of the fibrosis, particularly in one section, the collagen fibres are directed at angles, even right angles, to their normal course. The increased vascularity of the media is very marked. Round these vessels there is seldom any cellular infiltration, but dense fibrosis is frequent. The elastic has been destroyed in patches. There also appear to be patches of degenerate swollen elastic. Fibrosis of the outermost layers of the media fuses with the fibrotic adventitia. In one section the preparation is, unfortunately, folded over a portion of media in which more active changes appear to be present.

Only one vessel is present within the thickened intima. The thickened intima is certainly degenerate, but numerous muscle fibres are still present. These fibres are very regular in arrangement; the great majority lie in the long axis of the aorta. There is no area of pultaceous (true atheromatous) degeneration in the intima.

The great vascularity of the media, the abnormal arrangement of the bulk of the collagen fibres in the fibrotic areas of the media, the perivascular infiltration, and the focal fibrosis of the adventitia all bear witness to an inflammatory reaction, and a reaction of considerable intensity. Such a reaction might be secondary to the irritation of products of degeneration. There are indications in the sections that special stains would have shown some calcification of the media, but there is no evidence that medial calcification was of a degree sufficient to stimulate such a reaction. Calcification of a degree sufficient to cause so much inflammation would have been obvious, even in the sections prepared as they have been. Further, degeneration of the media would not have led to permeation of the intima by vessels. The degree of degeneration in the intima is very much less than that which is found to stimulate vascularisation and infiltration of the media and intima.

I think, therefore, that there can be no doubt that the inflammation of the adventitia and media is primary. The inflammation is of a very chronic sclerosing type, and there is little evidence of present activity; the inflammatory tissue is chiefly dense collagenous scar tissue; young, infiltrated granulation tissue is scanty. Further, apart from the one vessel in the outer part of the intima, there is no evidence of inflammation in the intima. The intimal thickening does not consist of granulation tissue, but is a degenerate thickening which has contained muscle fibres arranged definitely, for the most part longitudinally. The intimal thickening has the appearance of a musculo-elastic hypertrophy which has undergone degeneration.

I take the specimens to be examples of a very chronic syphilitic inflammation of low intensity, in which the inflammation has been almost confined to the adventitia and media. It is in such cases that one finds, as I think here, a hypertrophy of the intima over the inflamed, and, therefore, weakened media, instead of an inflammatory thickening of the intima.

In this diagnosis I have not been influenced by your intimation that the patient had had syphilis. I should, in view of the histology, have put my money on a positive Wassermann even had there been no other lesion in the body and no history.

London Hospital, Dec. 7th, 1915.

(II.)

I received the heart and aorta, and two sections of aorta, safely. I have given instructions for their return.

The sections appear to be from the same blocks as the previous pair, which I diagnosed as syphilitic.

The ascending aorta and the arch, from the commissure to the origin of the left subclavian artery, are without doubt affected by syphilitic inflammation. It is a beautiful specimen, and shows (1) the confinement of the lesion to one portion of the aorta (macroscopically), and in this affected portion (2) diffuse dilatation; (3) focal pouches and numerous sulci; and (4) the very characteristic, widespread, white, succulent thickening of the intima.

I can see no evidence of inflammation of the aortic valves. There is very little constriction of the orifices of the coronary arteries.

London Hospital, Dec. 24th, 1915.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.—A Comitia was held on May 11th, Dr. Frederick Taylor, the President, being in the chair. The following Members were admitted to the Fellowship, having been elected at the previous meeting: Dr. M. G. Foster, Dr. J. M. Hendrie MacLeod, Dr. H. L. McKisack, Dr. C. H. Miller, Dr. H. W. Wiltshire, Dr. C. E. Lakin, and Dr. E. A. Cockayne. A communication was received from the Society of Members of the Royal College of Surgeons of England. The President then dissolved the Comitia.

THE TREATMENT OF HEAD INJURIES IN A CASUALTY CLEARING STATION.

BY ALEXANDER DON, M.B., C.M.ABERD., F.R.C.S. EDIN.,
MAJOR, R.A.M.C. (T.)

THIS paper is based on a series of over 150 cases operated on since the war began, and most of them in a Casualty Clearing Station. Much has already been written on the subject, but there still remains great divergence of opinion as to the best mode of treatment, and especially as to the place where this treatment should be carried out. In France, for the past year at least, casualty clearing stations have occupied a somewhat anomalous position owing to the effect of trench warfare on their mobility. They have taken the place of stationary hospitals, less adequately equipped, perhaps, than the units going under that name, as the necessity for being able to move quickly must always limit their equipment. But the better opportunity for dealing with the more urgent cases of serious injury in a quasi-fixed unit has afforded the specialist in surgery in a casualty clearing station an experience he has not hoped for and which has made the work more interesting than that in any other medical unit. Most of the patients are birds of passage, and even head cases do not remain long enough for a final decision being arrived at as to the value of the treatment, but the serious cases have been kept in this station till they have either succumbed to their injuries or have got over the immediate danger of shock, and are sent down usually sufficiently well to take an interest in life again.

An X ray installation would be a great acquisition in dealing with such cases, and it has been argued that they should not be touched in its absence, but the difficulty in moving such an apparatus has to be considered as well as the danger to the patient of not relieving urgent symptoms. With the knowledge of the size and position of the missile which a radiogram affords the surgeon, better and more satisfying work could undoubtedly be done, but this is not a sufficient reason for passing all head cases hurriedly through to the base. An operation to remove the foreign body has often to be planned from altogether another avenue of approach than the entrance wound. The external, or scalp, wound, the injuries to cranium, dura, meninges, and brain, all require early attention to prevent sepsis and other immediate bad effects, and this can be given with better results, because earlier, at a casualty clearing station than will be possible at any later stage. Still better results might be attained nearer the front by symptomatic treatment; but, on the other hand, less time is given for symptoms to develop which may guide the surgeon as to how far operative interference is likely to benefit the patient.

Nor is it desirable to convert even a portion of a field ambulance into a hospital suited for major operations. But that is a matter for others to decide upon—C'est la guerre—and we must do our best for cases as they reach us. Head cases, I find, travel badly in motor ambulances, especially in winter. This is not to be wondered at. Much depends on the driving and on the state of the roads. Speed may be a desideratum in cases of severe hæmorrhage, but it adds much to the shock both in penetrating wounds and in simple concussion. The shock from the missile itself is often apparently trivial. I have known a man to steer his aeroplane for 30 miles after being hit, to walk afterwards into hospital, and to die suddenly three hours after admission. In flying there is comparatively little vibration. The running of the engine in a stationary plane or motor-car is specially irritating, but this vibration is not felt when the vehicle is in motion. A post-mortem examination in the case of the airman referred to disclosed multiple hæmorrhages and œdema throughout the brain and in the pons, yet the man showed no signs of head injury or shock to the casual observer. A long drive in an ambulance nearly always means serious collapse if the patient is lying, while sitting cases do not seem to suffer much from the journey. Thus it is that among patients with head injuries admitted to the hospital there is no middle class. The lying cases are nearly all unconscious, while the sitting cases walk in as if there were little the matter with them. It is the old experiment of the effect of a series of repeated small blows on the head in producing concussion or shock. Many of the lying cases recover

consciousness quickly after admission. They are at first cold, pale, and dazed, but after a couple of hours of rest they get warm and are fit for operation.

There is no contra-indication to immediate treatment in these cases as a rule. Some of the lying cases do not improve, but go steadily downhill. They are really moribund on arrival, though the end may not be yet awhile, and they are better left alone. I have operated on quite a few almost without an anæsthetic, but I have rarely seen any improvement follow operation if the patient did not react to what one might call intelligent nursing on admission.

In the majority of the unconscious cases from two to four hours will suffice to combat the shock of the journey, for the jolting does not produce gross lesions. They are then taken to the operating theatre and the wound cleaned as far as possible to prevent the spread of infection.

Operation.

The scalp is cleaned of all dirt, blood, and hair, either by washing and shaving, or preferably by a depilatory. In theory the whole scalp should be done, but in practice and with the military table with no head-rest it is sufficient to clear an area of two inches all round the wound. A sterile towel is then fixed by clips half an inch to the inner side of the edge of the prepared area, and through this space all operating is done. Iodine is painted over the scalp, and the wound is excised freely, leaving an edge which appears perfectly undamaged to the eye. This is best done with a scalpel by making two elliptical incisions down to the bone and enclosing the wound. Further incisions may now be made in the same line or at any angle, but only sufficient scalp should be opened to give a perfect view of the skull below the entrance of the missile. The skull is examined and further interference decided upon from its appearance and from previously observed symptoms. Where there is no obvious injury to the bone and no cerebral indications for opening it, the scalp wound is immediately and completely closed, and healing by first intention is the rule.

Where the skull shows signs of injury, or where cerebral symptoms show need for trephining, this is done. A trephine hole three-quarters of an inch in diameter is made at the side of the opening or fissure, and the dura is examined. The edges of the trephine opening are nibbled away to any desired extent, and if no blood clot lies underneath, or if there is no opening, nothing further is done. In the presence of subdural clot or penetrating dural wound the dura is slit up, and blood clot is removed and any bony spicules that are easily detected. Pulsation should then be free. Extensive probing with either a metal instrument or a catheter will usually reveal nothing further and may do damage, and finger probing is no more sensitive and much more destructive. The only indication for touching the brain is knowledge of the position of spicules of bone or metal or to relieve pressure from intracranial blood clot. Foreign bodies or bony spicules if sticking in the dura or felt just under it may be removed, and blood clot generally oozes out if the brain is gently depressed away from the dura all round the opening. The position of the missile can as a rule be determined safely only by a radiogram.

At the beginning of the war I used the flap operation for the scalp and excised a big piece of cranium by Vilbiss's forceps, but the exposure obtained is no advantage in a casualty clearing station, and the operation is more severe and more spectacular than is necessary. The flap incision also in some degree interferes with any future operating through the same or a bigger cranial opening, though this difficulty is surmountable if the radiogram should show this to be the nearest and best point from which to remove the missile.

Almost all shell wounds are followed sooner or later by cerebral abscess from in-carrying of hair and dirt to the brain, but there are no means of deciding which cases will form abscesses and which will not. Generally speaking, and this is borne out by experience, rifle bullets which enter point first and make a clean wound may be considered as innocuous, for a time at least, so far as sepsis is concerned. Their ultimate effects have not yet been definitely determined, but from the number of cases already reported as healed or recovered, and from the paucity of re-evacuations of such wounds from the front, as compared with those previously wounded in other parts of the body, it is fairly well established that the soldier with a rifle bullet lodged in his brain is *hors de combat* for this war, and that all such bullets should be removed in home hospitals. This is a work for brain specialists, for those alone who have acquired skill and dexterity in this field of surgery. It would surely be a simple matter to have three or four small hospitals throughout Britain specially equipped for this work. At present a surgeon may advise no interference, if he cannot perform the operation with confidence himself, and who can blame him for not attempting what he feels he is not qualified to perform?

Pieces of shell come under another category. Most of these will give trouble earlier from abscess formation, and the choice of the operating surgeon at present is between letting such patients die or opening the abscess and removing the peccant morsel of shell. This is a much simpler problem, for the life of the patient is at stake, and being an urgent operation, it must come within the scope of the specialist in surgery in every hospital where an X ray installation is available. No septic wound can heal if there is a foreign body in it; it matters not what part of the body is concerned. The brain is no exception to this general rule. We must remove the foreign body ere healing will begin. Few casualty clearing stations possess an X ray installation, and for that reason only very urgent cases of abscess will remain there for operation. It is wiser to send all penetrating wounds of the skull to the base hospitals as soon as they are fit to stand the train journey. The only advantage of doing anything to head cases—and it is a great one—in casualty clearing stations is that a majority of them present urgent symptoms which may be relieved and that the wounds are not yet grossly infected, and healing takes place by first intention after excision. Fear of opening the dura mater should never prevent a surgeon from doing what is necessary for his patient. He must not "funk" the necessary treatment for fear of criticism if urgent symptoms indicate its advisability. It is the patient's only chance, and a day is lost by transferring him to the base. The damming-off of the meningeal space is a well-known early if uncertain occurrence, but it is in no way comparable to the formation of peritoneal adhesions. It is a very limited process, and the subarachnoid space must be opened at any future operation, when a spreading general meningitis is likely to be much more serious. I have never understood the rationale of vaseline and other similar applications which I have seen used to dam off spaces or to prevent adhesions. They are unsuitable, as from the first they act as foreign though sterile substances, and they can never mix with the cerebral fluid or the blood serum.

I have been privileged to see some of the brain work both in English and French hospitals since the war began and to compare the results obtained. In the English units the huge scalp flap and large cranial opening are the rule, and the operation to reach the dura is a tedious, serious, and bloody one. I have seen an English surgeon stop and not open the dura, where intracranial pressure symptoms were the sole reason for an operation, and I thought he acted wisely in not proceeding further in view of the patient's condition and the time already spent. In the French hospitals the linear or angled scalp incision and small trephine opening are the vogue, and I am bound to say their results are better than ours. This is borne out by published statistics, so far as I have been able to examine them. Naturally my own experience is limited, but the desire of the soldier in the new armies when he first goes into the trenches to get a look at the enemy has led to a comparatively large nnmber of rifle bullet wounds of the head. It is the sniper's opportunity. The high-explosive shell also caused a number of head injuries previous to the adoption of the useful steel helmet. Bombing accidents at practice are also fairly frequent. In quieter times all these cases have received first treatment, and I am convinced that the minor operation I have lately practised is the more beneficial. The patients are seldom any more collapsed after a head operation. The scalp incision causes little shock, and the trephining and nibbling practically none, and if opening of the dura is indicated there is often marked improvement from relief of pressure. The removal of depressed bone is also of great benefit.

The indications for operation are three: (1) The presence of a penetrating wound of the head; (2) the fitness of the patient to take a general anæsthetic; and (3) a surgeon with some experience in cranial surgery. The first two are fairly definite. The third is the crux, and here, as in most

matters in surgery, the operator is a law unto himself. If he finds his patients do badly after operation he should abstain from interfering. He alone can judge, but he may not draw the conclusion from this that operative interference on the part of others is a mistake. To tinker with scissors to trim the edges of the wound in the scalp, to remove an unnecessarily large piece of cranium, to open widely the dura mater to allow him to poke his finger into the brain, are all detrimental at the time, and the future advantages to the patient must be great to warrant such. But to remove the dirt from the scalp wound by a clean cut, to open the cranium just wide enough for the extraction of pieces of bone pressing on the dura or sticking into the brain, to allow the escape of blood clot and pent-up brain débris, and to restore pulsation, involves slight shock, takes a minimum of time, and gives excellent immediate results. Primary healing is the rule, hernia of brain the exception.

Drainage.—At first I drained all cases with tubes, stuck even into the brain opening, from a fear of infection by gas and other organisms. Gas infection is rare in head wounds. These saprophytes thrive only in dead tissues, and consequently only in the graver lacerated wounds of the head, and these are usually rapidly fatal. A cellulitis, almost erysipelatoid in appearance, is not uncommon, especially in wounds of the frontal region, but it is rarely extensive. Tubes do not drain deep sinuses in brain tissue till abscess has formed and the walls are lined with granulations, as they become quickly blocked by blood-clot and brain débris. It is better to drain superficially with a small piece of rubber dam, which is removed at the first change of dressing.

In a clearing station one cannot treat all head cases. In a rush after an attack this would be impossible, and many cases have to be passed on after a change of dressing. At such times one reckons patients by the standard of their relative fitness to be safely sent down by train, and only the worst cases are retained for treatment. In normal times of comparative quiet I have treated all the head injuries on the above lines. The patients are then sent to the base as soon as they are fit to travel with safety, whether the stitches have been removed or not. A few herniæ cerebri have been controlled by bridging. Bone has in no case been replaced. Fits supervened in one case after bridging, and were relieved by readjusting the dressing, and in another case by a second operation to relieve pressure when the dura had not been opened. The deaths after operation amount to a little over 9 per cent., and some of these were hopelessly bad on admission.

Some Typical Cases.

CASE 1.—2050, Private ——, admitted at 6 P.M. with shell wounds of arm, leg, and hand on right side. Some twitching of left arm and leg. He had a long, lacerated wound running horizontally along the upper part of the right parietal bone. Partial paralysis of left leg. Pulse 99, temperature 102·4° F., respirations 25. Quite unconscious, cold, and collapsed. Next morning pulse 130, temperature 103°, respirations 32. Now complete paralysis of left leg. Operation 11 A.M. Wound excised and two angular incisions made to form a flap. Vertical fracture extending whole depth of flap and beyond. Slight horizontal scar on bone. ¾ inch trephine opening at lower edge of scar. An area of cranium 2½ inches by 1½ inches removed with Vilbis's forceps. No extradural clot or perforation. Dura bluish-black in colour. Opened by crucial incision and a blood clot enough to fill an egg-cup removed. Drain across dural opening, and wound closed. Third morning: Pulse 99, temperature 100·6°. During night following a good deal of twitching of left side. Fourth day: Only muscles supplied by left facial showed clonic spasms. Temperature 98·4°, pulse 90. He recognises ward orderly and sister. Does not speak, but calls out when leg and arm are being dressed. These wounds are very septic. Head wound clean. Transferred to base eighth day greatly improved. I think immediate operation was here justifiable.

CASE 2.—2279, Private ——. Lacerated wound left side 2½ inches in length, centre just above ear level. Pulse 70, temperature 97·8° F. on admission. Fairly conscious, but slow in expressing himself. Second day: Not so well; pulse 116, temperature 101·5°, respirations 28. More dazed, and roused with difficulty. The wound was excised. In skull, small irregular wound ¾ inch by ½ inch blocked by blood clot. A ¾-inch trephine opening made above and depressed bone removed and edges of shell wound snipped away. No pulsation. The dura was opened by an oblique slit 1 inch in length, including the small entrance wound. About 1 ounce of blood clot and brain débris came out. Pulsation now good. Wound closed with split drain down to dura. Third day: Pulse 64, temperature 99·4°, respirations 24. Bowels opened with calomel. Fifth day: Pulse 60, temperature 98·6°. Recovered consciousness to great extent. Sent to base next day. Scalp wound clean.

CASE 3.—18345, Private ——. Shell wound left side and back of head. Entrance wound small, 1 inch above and behind top of ear. Exit wound on postero-lateral aspect of occipital bone on same side. Very ragged and edges everted ¾ inch in diameter. Free bleeding, patient collapsed, cold, and unconscious. Pulse very rapid and feeble. Operation one hour after admission, owing to hæmorrhage persisting and free escape of brain débris. Patient still drowsy, but conscious. A horseshoe incision was made between the two wounds, which were excised. The cranium between the wounds was shattered into fragments, one loose piece being 3 by 1½ inches. Brain much lacerated and oozing through the torn dura. Very free hæmorrhage, which was controlled by ligature and hot water. A split drainage-tube was opened out and placed flat across the gap in the dura, and the scalp wound closed except behind where tube protruded. Second day: Unconscious. Urine and fæces passed in bed. Pulse 108, temperature 98·4° F. Third day: Conscious and able to talk. Still free discharge, blood and brain matter. This continued and became purulent, with hernia cerebri. Hernia shaved off, when a large amount of pus escaped. He died two hours after being returned to bed.

Necropsy.—Injury to brain running downwards and forwards from posterior wound to region of left Gasserian ganglion, where a piece of shell was found. The second wound must have been caused by a splinter of bone, as no second piece of shell was found. This case would have been better left alone, but record on card showed gunshot wound, and the two wounds suggested entrance and exit.

CASE 4.—2760, Private ——. Rifle bullet wound right side, running along direction of Rolando's fissure for 2 inches, beginning above 1 inch from the midline. Not quite unconscious. Came down lying. Recovered consciousness, and got warm after being in hospital two hours. Operation was done then. Small furrow fracture along Rolandic area. A trephine opening made at lower end and depressed bone removed. The dura was not opened, as there was not much discolouration. Wound completely closed. Next day he complained of "pins and needles" in left arm and hand. Third day: There was complete paralysis of left arm and tremor of upper eyelid. Pulse 82, temperature 100·2° F. He remained in same condition till evening of fifth day, when he said he felt better, and could move his fingers. He sat up when orderly's back was turned in the evening, and a fit ensued with left deviation of the eyes. As he continued unconscious and having spasms, he was again taken to the operating theatre, dura opened, and a small clot removed from underneath it. The fits did not return, but again he had the sensation of "pins and needles," which left him after three days entirely. He went to base on twentieth day, having regained the use of his arm completely.

The dura should have been opened at the first operation.

CASE 5.—12351, Private ——, admitted in early morning with a wound 2 inches above and 1 inch in front of right ear. Ragged and ¾ inch by ½ inch in size; shell wound. Very collapsed, cold, dazed, but conscious. Pulse 106, temperature 100° F., respiration 20. Recovered towards mid-day. Pulse 84, temperature 99·6°, respiration 20. Some swelling round wound and escape of brain débris and blood clot. Operation 5 P.M. Elliptical incision obliquely, excising wound. Piece of shell found sticking in bone with small opening at its lower side. Trephine opening below. Inner table splintered; some fragments removed. About a dessert-spoonful of débris of brain and clot escaped through a small hole in dura. Dura not opened as no clot was visible through it round the puncture. Rubber dam put in and wound closed. Second day: Temperature normal, pulse 68, respiration 24. No further symptom of note till he left hospital on seventh day.

CASE 6.—2967, Private ——. Rifle bullet at hair-line above right eye, passing in downward direction. No exit wound, but bleeding from mouth and nose. Came in as sitting case, and quite conscious and fit. Taken to operating theatre one hour later. Wound excised and cranial splinters removed, leaving an opening in skull ¾ inch in diameter. Wound of exit found in hard palate. Pulse 100, temperature 101° F. on third day, which was highest. He was conscious and remembered that his upper plate of teeth was lost at the time of the injury. Temperature normal and pulse 76 on fifth day. Wound clean. Went to base sixth day, quite fit, and face wound quite healed.

CASE 7.—Lieutenant ——, age 21. Admitted 10 P.M. with multiple small grenade wounds over front part of head and face. One penetrating wound 1½ inches above root of nose. Right eye destroyed. He was very irritable, but conscious, though difficult to rouse. The eye was excised by Lister's method. Several wounds excised, but only one found with penetration of cranium as above stated. About a score of wounds over brain area, but mostly small. Second day:

Still irritable. Pulse 102, temperature 101° F. Eye dressed and looking well. Face much swollen. Third day: Pulse 95, temperature 100·6°. Irritable and refused aperient. About a teaspoonful of thin fluid escaped from puncture on brow when dressing was taken off. Fourth day: Took calomel, but refused mag. sulph. later. No movement of bowels. Lies with head covered and on right side. Sent to base on fifth day. There was evidently a good deal of cerebral irritation, and he will probably not do very well.

CASE 8.—Lieutenant ——, admitted 12 P.M. in fair condition, drowsy but conscious. Gunshot wound forehead. Entrance wound small, 1 inch above root of nose. Exit wound right side above attachment of ear. Right eye destroyed and soft. Angular incision made excising wound and running along supra-orbital ridge to external angular process of frontal bone. Whole upper wall of orbit detached downward and almost loose. Pieces of bone removed. Eye excised and rubber dam drain at external end of skin wound. Wound above ear excised. There was much laceration of right frontal lobe. Second day: Conscious. Pulse 88, temperature 99·6° F. Complains of headache. Eye dressed. Wound in forehead clean. Sent to base sixth day, conscious and feeling pretty fit.

CASE 9.—Sergeant ——, admitted 2 A.M. unconscious, cold, and very collapsed. Wound over vertex, half an inch to right of middle line and over the parieto-occipital fissure. Bandages very blood-stained. Dressed and kept warm. 4.30 A.M. operation. Wound excised and extended transversely across scalp both ways. Large hole ½ inch by ¾ inch close to the longitudinal interparietal suture passing inwards to left. Trephine opening made to right of wound. Depressed bony splinters removed. One large piece was sticking into longitudinal sinus and its removal was followed by free and persistent bleeding. Plugged with gauze, and wound closed over a piece of rubber dam covering the outer side of gauze. Several other wounds of right side and back, one large of right shoulder dressed. Patient very bad at end of operation. Same evening, pulse 70, fairly strong, temperature 101·4°, respirations 30 and stertorous. Fairly conscious. Second day: Still much the same. Head wound not dressed but other wounds dressed and looking fairly clean. Pulse 90, temperature 100·5°, respirations 26, and quiet. Taken some nourishment. Third day: Gauze plug removed. No bleeding. Wound dressed. Pulse 86, temperature 101° in evening. Conscious and looking well. Was sent to base on fifth day.

This is the only case where the longitudinal sinus has been badly torn, but in several cases there has been free bleeding suggesting injury to lateral and occipital sinuses. All cases have been plugged with dry sterile gauze which has been left in for 48 hours.

Summary.

1. All scalp wounds should be completely excised as early as possible.
2. Where cranium has been injured or there are cerebral symptoms suggesting intracranial pressure the trephine should be used and the dura opened if necessary.
3. Drains into the brain tissue are useless in early wounds and are probably detrimental to brain tissue.
4. No probing of any kind should be done in absence of a radiogram showing missile.
5. Early movement of cases of head injury in motor ambulances causes considerable shock to lying or stretcher cases.
6. The mortality in cases reaching a casualty clearing station 15 to 20 miles behind the firing line will be about 1 in 10 if every case not moribund is operated on for urgent symptoms only.
7. All pieces of shell and bullets sooner or later cause brain trouble, and should be removed in specially equipped hospitals.

NOTIFICATION OF INFECTIOUS DISEASE: THE PROPOSED REDUCTION OF FEE.—At a meeting of the medical men of Gorton, Manchester, the proposal by the Local Government Board to reduce the fee for the notification of infectious diseases was discussed and the opinion strongly expressed that such parsimonious action was dishonourable and ungrateful, particularly at the present time, when extra and heavy calls have been made upon the medical profession for voluntary and charitable work, such as attending the wives and children of soldiers and sailors, signing many thousands of certificates per week for those unable to attend at the post-office to draw their weekly pay. The heavy work of attending to the private and panel patients of those doctors who are serving in the forces, the increase in the price of drugs and chemicals, and the enhanced cost of professional living made the action of the Local Government Board, it was held, very wrong.

TWO CASES IN WHICH THE LATERAL VENTRICLE WAS OPENED

IN THE COURSE OF OPERATIONS FOR THE REMOVAL OF A BULLET AND INDRIVEN BONE FROM THE BRAIN.

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THE extreme fatality that follows the opening of a lateral ventricle during an operation for the removal of a foreign body, whether a bullet, shell fragment, or depressed bone, makes perhaps this record of two cases in which recovery followed the operation justifiable.

In about 200 cases that have come under my notice there have been some half-dozen cases where after the removal of the foreign body cerebro-spinal fluid has been found escaping from the depth of the wound, either at the operation or during the dressings some little time after the operation. In these cases the marked infection present had compelled an operation to be undertaken, although X rays showed the likelihood of the ventricle being involved, and, further, this marked infection had reluctantly compelled one to leave in a drain. These patients mostly died from cerebral hernia following infection of the ventricle and basal meningitis, but one died from extreme emaciation and wasting due directly to the persistent escape of cerebro-spinal fluid from a fistula that connected the lateral ventricle with the scalp wound. In view of this high mortality I ventured in the following two cases to depart from the general rule in early cases of always draining the track after the operation for the removal of foreign bodies or depressed skull fragments which were embedded in the brain. In these two cases the signs of sepsis were absent or slight, and so I felt justified in taking the risk of leaving a possibly infected track of the brain undrained to the risk of establishing a cerebro-spinal fistula. Fortunately, this procedure was justified, and either the wound was not infected or probably the patient's tissues were able to overcome the infection that was there. Unfortunately, in the vast bulk of wounds of the head where missiles or fragments of bone are embedded in the brain marked sepsis is only too obviously present, and a fatal result is very likely to follow when the ventricle is unavoidably laid open at the operation. Both the cases occurred at a base hospital in France, where the head cases were usually very severe and the wounds heavily infected.

CASE 1.—The patient was admitted to hospital on August 28th, 1915. No history was obtainable. There was a small penetrating wound 2 inches behind and 1 inch above tip of the right pinna. Temperature 97° F., pulse 56. The patient was restless and would not speak, his face was congested, and the respirations were slow and shallow. He was able to move. There was no paralysis of face, limbs, or tongue, and the reflexes were normal except for a diminished abdominal reflex and a doubtful Babinski. X ray examination showed a rifle bullet embedded in the brain opposite the wound, and this was localised to be with its point at about the middle line. On the 31st the patient was worse. There was more unconsciousness; the pulse-rate was 50 and the temperature was 97°; and the breathing was stertorous. Operation was decided upon.

Operation.—A large scalp flap was turned down and a small hole in the skull was exposed. A small trephine hole was made in the skull, and the bone round the wound was removed with the forceps. A small opening, too small to take the little finger, was found in the dura, and the brain beneath the dura was felt to be under extremely high tension. The bullet could be felt with a probe at a depth of 6·5 cm. The cerebral tension was relieved by lumbar puncture which showed the cerebro-spinal fluid to be blood-stained. After slightly enlarging the opening in the dura the end of the bullet was grasped by a pair of forceps and the bullet was removed. A gush of cerebro-spinal fluid and disintegrated brain matter now escaped from the wound in the brain, and the fluid continued trickling away during the rest of the operation. The tension of the brain fell markedly. The wound in the scalp was floored by a flap cut from the pericranium and the scalp flap was sutured. No drain was left in. On Sept. 1st the temperature was normal. The patient was more conscious, there was no draining of fluid from wound, and no bulging of the flap. Lumbar puncture was performed, and 10 c.c. of blood-stained fluid were withdrawn. Headache was present.

On the 3rd the patient was more conscious and had commenced to speak, and the headache was less. There was a boggy swelling of the side of the scalp under the flap, and this swelling extended to the side of the face. The eyelids were markedly œdematous and almost transparent from the fluid in them. Temperature normal. The fluid was thought to be of cerebro-spinal origin, which had escaped from the lateral ventricle along the bullet track and was collecting in the tissues of the scalp and the face. There was no escape from the bullet or operation wounds. This swelling gradually subsided, having lasted for about a week. On the 11th the patient was quite bright. The pulse-rate was 80 and the temperature was normal. There was no weakness, and except for some slight affection of speech the patient seemed quite well. He was sent home to England about a week later and his condition appeared to be normal save for the slight affection of the higher speech centres.

CASE 2.—The patient was admitted to hospital on Oct. 24th, 1915. He had been wounded by a rifle bullet, the entrance wound being 3 inches above the nasion and 1½ inches to the right of the mid-line and the exit wound 2 inches behind the entrance wound and 3 inches to the right of the mid-line. The patient's mental condition was normal, as also were the cranial nerves and the motor system. The left abdominal reflex was greater than the right, and the knee-jerks and ankle-jerks were increased. Double Babinski was present. Temperature 98° F.; pulse-rate 64. An X ray examination showed a defect in the skull situated between the two wounds and several large pieces of bone imbedded in the brain at a depth of from 3 to 4 cm. below the defect in the skull.

Operation.—On the 26th a large scalp flap was turned down, and disintegrated brain matter was seen to be escaping from the defect in the skull. A small trephine opening was made and the bone was removed around the dural defect. A large cavity was found in the brain filled with disintegrated brain matter and containing several large pieces of bone at its bottom. These were gently removed, but cerebro-spinal fluid was seen to be escaping from the bottom of the cavity in the brain. The wound in the scalp did not appear to be grossly infected; it was floored in by a pericranial flap and the scalp was sutured in place. No drain was used. The patient was put on urotropine. On the 27th the temperature was 99·5° F., and the pulse-rate 60. There was some headache. The patient got out of bed, but he seemed rational. 28th: Temperature 100°; pulse-rate 66. More headache. Lumbar puncture showed slightly increased pressure. 29th: Temperature 101·8°; pulse-rate 78. Headache; patient irrational; marked bulging of flap and some œdema. A needle was put in under the flap but nothing was drawn off. 30th: Temperature 100°; pulse-rate 70. Patient quieter; flap bulging less. Nov. 2nd: Temperature 98·9°; pulse 76. Bulging of flap gone; patient usually quiet but at times delusional. He stated that his sister had visited him, but such was not the case. Some headache; passed his urine in bed at times. 3rd: Better; quite bright mentally; no incontinence; wound healed by first intention; no bulging; power normal; knee-jerks normal; no Babinski. Some loss of sensation to pain on left side. On the 16th the patient was transferred to England. Condition the same.

In the first of these cases it is quite likely that the wound was clean, or only very slightly infected, the marked increase in intracranial pressure being due to œdema following the trauma, although the patient appeared to be likely to die from it. This was very markedly relieved after the bullet was withdrawn and the ventricular fluid allowed to escape. The track evidently kept open for some time, as was shown by the accumulation of fluid under the scalp, and it is probable that this kept down the intracranial pressure.

In the second case a certain degree of infection was, I think, present. This is shown by the rise of temperature and the bulging of the flap. Whether this bulging was due to escape of fluid or to bulging of the brain is not certain, but probably to both, as there was some œdema, but nothing like to the same extent as in the former case. Fortunately the patient was able to overcome this infection after the removal of the bone. It is possible that he might have done so if he had been left without operation, but experience has shown this to be more dangerous than operative treatment. In the early stages of the war cases were seen in which patients with indriven fragments of skull were left alone on account of the complete absence of symptoms and rise of temperature, yet almost invariably they developed abscesses around the fragments. Still, it must be admitted that an occasional patient apparently recovers with an inaccessible foreign body in his brain.

THE TREATMENT OF HEPATIC FAILURE IN YELLOW FEVER, MALARIA, AND OTHER CONDITIONS: A SUGGESTION.

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IN THE LANCET of Nov. 21st, 1903, I described a case of multiple liver abscess which terminated fatally. At the time I thought that death was due to shock, but I was puzzled by the symptoms, which were peculiar and suggested some failure of the emunctories. Months afterwards Mr. Harold Stiles, of Edinburgh, informed me that, having read the account of the case, he had no doubt that death was in reality due to delayed chloroform poisoning, a condition which at that time was scarcely recognised. I know now that Mr. Stiles was correct, and I am convinced that symptoms similar to those present in delayed chloroform poisoning may occur in tropical diseases where the liver, so to speak, is thrown out of action, where it fails to perform its functions, and where, as a result, the patient is in imminent peril of his life. A study of tropical pathology has led me to the conclusion that sufficient stress has not been laid on this hepatic failure, at least so far as remedial measures are concerned. Recently, as a member of the Yellow Fever Commission, I have had my attention closely directed to the state of the liver in yellow fever. Recently, also, I have been brought directly or indirectly into contact with cases of so-called "infectious jaundice," and I have been privileged to hear my colleague, Colonel William Hunter, A.M.S., expound his views on the pathology and treatment of this and allied conditions. I have also had opportunities, at Panama and elsewhere, of studying sections of the liver from cases of yellow fever, toxic jaundice, blackwater fever, and malaria associated with icterus, and of noting the marked destruction of liver cells which occurs in those diseases. These studies have brought to my mind a case of malarial infection in the Sudan where, although quinine eventually cleared the blood from a heavy infection of *P. falciparum*, death occurred after a peculiar set of cerebral symptoms. At the time the medical officers in attendance on the case felt themselves between the devil and the deep sea, for they had difficulty in deciding whether these symptoms were due to the action of malarial toxins or were evidence of a tendency to quinine poisoning in a subject very susceptible to the effects of the drug.

In the light of recent work and remembering the condition of the liver as revealed post mortem, I have no hesitation in saying that the symptoms in this case also were an expression of hepatic failure.

Now what are the symptoms associated with the destruction of liver cells? They are chiefly of cerebral origin, pointing to a poisoning of the higher nerve centres. The patient begins to grow restless, watchful, excited, anxious, and light-headed. He complains of severe headache and, it may be, of photophobia. He wanders in his mind and suffers from an incoherency of ideas and from hallucinations. His muscles twitch and tremble and delirium ensues. It may be of a low, muttering type, or may become active, the patient trying to get out of bed, but it is not usually very violent, for there is great weakness. Convulsions may set in, and if cardiac or respiratory failure does not occur coma ends the scene. In addition, we find that if jaundice is already present it deepens, while hiccough, clammy sweats, and anuria are not infrequent.

It will be found that these symptoms are common to delayed chloroform poisoning, yellow fever, severe cases of epidemic jaundice, the so-called Mediterranean yellow fever, Weil's disease, whatever that may be,[1] blackwater fever, certain forms of fatal malaria, acute yellow atrophy, phosphorus poisoning, &c.

All this is well known, but confining ourselves to the tropical diseases, it would seem that these symptoms have

[1] Recent Japanese work goes to show that Weil's disease is due to a spirochætal infection (Journ. Exp. Med., March, 1916).

been vaguely attributed to the action of the toxins of the virus causing the disease and that little or no attempt has been made to treat the serious liver condition which is present. It is true that in yellow fever a lessening of the urea function of the hepatic cells and resulting ammoniæmia with its toxic cerebral effects has been recognised, and we are advised to dilute the toxins in the blood and to stimulate the action of the kidneys by an alkaline treatment such as that of Sternberg. This treatment has the further benefit of counteracting the blood acidosis which is present in these cases, and which may be recognised by the occurrence of acetonuria. It is noteworthy that Burkitt has quite recently treated with success cases of blackwater fever by means of intravenous injections of calcium chloride and either potassium or sodium bicarbonate. By this means he combats the diminished blood alkalinity, for the urine in blackwater cases contains acetone. The acidosis, of which it is the expression, is due to the fatty acids being poured into the blood owing to the disordered hepatic condition, and the above line of treatment is undoubtedly based on sound principles. The object of this note, however, is to suggest that we may go further and, on the lines indicated by Colonel Hunter in cases of toxæmic jaundice, &c., endeavour to prevent or at least cut short the rapid destruction of liver cells which, it seems to me, plays so important a part in bringing about a fatal issue in such diseases as yellow fever and bilious remittent fever.

It is necessary briefly to consider how this destruction is brought about. Colonel Hunter's views are fully set forth in Allbutt's "System of Medicine," Vol. IV., Part 1. He believes that in such diseases the antitoxic functions which the liver cells discharge in relation to the portal blood are first of all depressed and then suppressed by the poisons generated by the disease viruses. Strain is thrown on the liver cell. It endeavours to maintain its energy by taking up carbohydrate material. If sufficient cannot be obtained from sugar it turns to fat, and when this also fails to yield the supply to tissue proteins. There is thus increased fat metabolism with acidosis and acetonuria, and the liver cell, coming under the influence of its own ferments, undergoes autolysis and thus presents the characteristic appearances seen post mortem. Colonel Hunter further thinks that ammonia, as a rule, keeps the ferments in check, and that the practice, common alike before operations and in the early stages of febrile diseases, of purging the patient with calomel and of withholding food, prevents the formation of ammonia and thus the hepatic ferments have full play. As already stated, the liver cells being thus thrown out of action fail to deal with the poisonous portal blood. The latter passes unchanged into the general circulation and the characteristic cerebral symptoms result.

I am aware that Colonel Hunter's views have not met with acceptance in all quarters and that the precise manner in which the disease toxins act on the liver cells has not been ascertained. It may, as has been suggested, be a neutralising action upon anti-ferments which, quite apart from any question of ammonia, normally preserve the hepatic cells from self-digestion. All this question requires further elucidation, but Colonel Hunter's theory and researches have certainly led to one important practical conclusion—i.e., the necessity in cases of delayed chloroform poisoning and toxæmic jaundice of keeping up the supply both of sugar and of protein food, the latter in peptonised form. The former is ensured by the administration of glucose. It can be given by the mouth or as rectal enemata, solutions of 5 or 10 per cent. being used. If pure glucose cannot be obtained, preserved (candied) fruits may be given, or, indeed, sugar in any form. The necessity for protein is met by administering enemata of peptonised beef-tea, eggs, or other protein material.

So far as I know, this line of treatment has not been tried in those tropical diseases in which hæmo-hepatogenous jaundice is a marked and important feature, and it is with the object of directing attention to the advisability of employing it that I submit these few notes. They make no claim to any originality, but merely voice a suggestion which I trust may prove useful, for the treatment of yellow fever and other tropical diseases in which liver failure occurs is at present far from satisfactory.

Cairo.

HYSTERICAL MUTISM IN A BOY.

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THIS case is recorded for two reasons. In the first place, because of its intrinsic interest as an example of psychical shocks succeeding each other at short intervals and culminating in typical "hysterical mutism" with its sudden and dramatic recovery. Secondly, because it seems a particularly instructive case at the present time. Since the outbreak of war there has been a distinct tendency to suggest that various affections occurring as the result of war conditions are, in their nature, something essentially different from what one has observed previously in times of peace. This tendency shows itself by the giving of qualifying names to such conditions, thus: trench fever, trench feet, trench nephritis, camp jaundice, shell shock, &c. Time will show whether any of these affections are actually something new or whether they are old acquaintances brought into special prominence by war conditions.

History of Case.

A little boy, aged 11 years, was sent to my out-patient clinic at the Royal Hospital, Sheffield, on Feb. 4th, 1916, by Dr. Thomas Chetwood, school medical officer for Sheffield, with a history of having been completely dumb for five weeks. His mother dates the beginning of his illness, three years ago, when he was knocked down by a taxicab in Doncaster. After the accident he was unconscious for twelve hours. He sustained a long, deep cut over the right occipito-parietal region, which necessitated several stitches, and suffered from severe concussion. He was kept in a darkened room for five days and was not allowed to go to school for twelve months. Before the accident he was, according to his mother's statement, a bright, intelligent lad, but afterwards he became heavy in appearance, lethargic in his movements, and slow at learning his lessons. His condition remained the same until December, 1914. The family had removed to Hartlepool, and were living there when the bombardment took place on Dec. 16th, 1914. The boy was at breakfast when the shelling began, and immediately became very excited and terrified, much more so than his brothers and sisters. This excitement and nervousness persisted for some time, and was intensified a few days later by a rumour that an air raid was expected. He would not be left alone, and insisted upon sleeping with his parents and keeping his clothes on all night. The excited condition wore off after a while, and he reverted to his previous dull mental state, but his behaviour was still characterised by a certain nervousness. Soon afterwards they removed to another part of the country, where his father was foreman of a gunpowder factory. This factory was blown up by an explosion of great violence on June 7th, 1915. The boy was in the village when the explosion took place. He became very excited, and anxious about his father, who was in the factory at the time of the explosion. The excitement occasioned by this accident wore off after a little time, but the boy's mental apathy seemed more marked. He made no progress with school work, and his schoolmaster pointed out a lack of concentration—"his thoughts were always wandering." This continued until November, 1915, when his mother began to notice symptoms of "queerness" in the boy, and on Nov. 19th, thinking his behaviour somewhat irrational, she asked him, "as a test," to sweep out the cellar, "without providing him with a light." He performed the task properly, but while his mother was upstairs later in the day he raked out the whole of the fire in the kitchen grate. This last incident was typical of his strange behaviour from this time onwards. Occasionally he would whistle or sing loudly, which he had not been accustomed to do previously. From being dull and lethargic in appearance, he became at times wild-looking and developed a vacant stare. He would not sleep alone. They had by then removed to this neighbourhood, and his mother sought advice regarding his condition at a local hospital. His symptoms were attributed to enlarged tonsils and adenoids, and tonsillectomy was advised. The correctness of this diagnosis was disputed by his mother, who remarked without being asked, that "he did not snore, he did not breathe through his mouth, and he did not speak thickly." However, it was decided to operate on him. On being told of this he became very terrified and remained so up to the date of operation on Dec. 29th, 1915, from which time until the date of admission he has been absolutely mute, never uttering a sound.

When I saw him on Feb. 4th, 1916, five weeks after the operation, his condition was as follows. Rather small for

his age, face pale, brows knitted, no appearance of excitement. When spoken to he makes no reply. Asked to say the words "father," "mother," he moves his lips slightly, and it is possible to distinguish a difference in the movements of his lips corresponding to the two words, but there is no sound uttered. He understands everything that is said to him, and responds by suitable actions. Asked to whistle, he puts his lips in position but makes no sound. Various forms of treatment had been tried, including faradism, to the throat, but without effect; it was therefore arranged to take him into hospital, and further general examination was deferred until then.

The patient was admitted into the Arthur Jackson ward during the afternoon of Feb. 9th, and I saw him there shortly afterwards. He was playing at draughts with another boy, and the condition of mutism remained just the same. On the following afternoon, whilst going round the ward, I found him in bed, and being unaware of what had occurred since my visit the day before I asked him to whistle. To my surprise he did so at once, and when I commented on his improvement he replied in normal speech. Inquiry as to when and how recovery took place elicited the following curious story. The ward is an adult male medical ward; at one end there is a small single ward. The occupant of this single ward was an old man, of somewhat wild appearance, with long hair standing straight up from his head. During the early hours of the morning this old man wished to go to the closets, which are at the opposite end of the ward. He therefore put on his dressing-gown and walked down the ward. As he came round the broad pillar of the central fireplace of the ward the little boy happened to wake up, caught sight of this bizarre figure in the semi-darkness, and screamed. The old man, who had heard of the arrival of a dumb boy, and wishing to be friendly, came up to the bed and asked him if he was the "dumb boy." This intended kindness frightened the boy still further. The result was that he shouted for the nurse. The spell was broken!

A considerable number of cases of mutism, attributed to shell explosions, have been recorded, and the question as to whether they are simply "hysterical" or not has been raised. This case seems in some respects to form a link between the hysterical mutism of peace and the mutism occurring under war conditions. The boy, although not in the trenches, was exposed for a short time to terrific shell fire at Hartlepool. Six months later he was in close proximity to an explosion which may fairly be compared in severity to that of a trench mine. Yet neither of these tremendous shocks was sufficient in his case to produce immediate "mutism." It was reserved for an ordinary surgical operation of everyday occurrence in civil life to supply the back-breaking straw, and determine the onset of symptoms. Had the condition arisen as an immediate effect of either the Hartlepool shock or of that at the gunpowder factory, as it might easily have done, it would have gone to swell the total of cases due to the bursting of a high explosive. As it is, it favours the view that the cases of mutism occurring as a result of the war conditions are probably instances of hysterical mutism rather than anything distinct and different in their origin or nature.

In this boy we see the cumulative effect of repeated psychical shocks, at considerable intervals of time. In the soldier of neuropathic tendency the conditions of modern trench warfare must produce psychical shocks quite overwhelming in their cumulative action—a summation of stimuli. As regards the determination as to what form the hysterical manifestation takes, it is interesting to note that in this boy the mutism followed an operation on the throat—the neighbourhood of voice production. So also, ordinary hysterical aphonia is often preceded by laryngeal catarrh.

It does not seem unreasonable to suppose that, in cases of mutism following shell explosion, the particular form which the hysterical manifestation assumes is determined by the powerful effect necessarily produced upon the auditory apparatus, which, as we know, is intimately associated with the spoken word.

I do not propose to discuss at length the relationship between hysterical aphonia and hysterical mutism, or the possible difference in the seat of the lesion. Wyllie[1] divides the speech mechanism into two parts, the oral, comparable to the violinist's left hand stopping the strings and varying the notes, and the laryngeal, corresponding with the violinist's right hand wielding the bow and producing the tone. The simile is an apt one. To produce normal effects both mechanisms must work harmoniously. In hysterical aphonia the laryngeal mechanism alone fails—the patient speaks, often volubly, but it is in a toneless whisper. To elaborate Wyllie's simile, the bow wants "resin" or is not properly applied. In hysterical mutism both mechanisms have failed—there is no sound produced at all. The bow is not pushed across; the fingers are not applied to the strings. In this boy the conditions seem to be intermediate. The fact that he could place his lips into recognisable forms required for various words may be compared to the condition of a violinist who can still use his left hand to "stop" the notes, but produces no sound because he does not apply the bow to the strings at all. The seat of trouble in such cases is somewhere higher up than all these mechanisms. To apply Wyllie's simile, it must be in the player himself, he simply cannot make himself play. That the mechanism in both parts is intact is proved by the completeness of recovery following, as it so often does, immediately upon some sufficient emotional stimulus.

In my experience hysterical manifestations are not very uncommon in boys. In 1900[2] I recorded a series of such cases taking various forms. Until recently, however, I have never seen a case of "dermatitis artefacta" in a boy. A few weeks ago a boy aged 13 was sent to my out-patient clinic with one of the most striking "artefact" eruptions that I have ever seen. In the middle of the right cheek there was an irregular area, about the size of a five-shilling piece, consisting of a group of small excoriations, obviously due to friction. In the centre was a circular black patch about the size of a shilling. The mother informed us that the eruption had first appeared a year before and was then said to be ringworm. It disappeared after a time and had recently appeared again. The black centre had only been noticed for the last few days, and had naturally caused considerable and gratifying alarm. The black pigment was easily removed by the application of wet lint, it appeared to be soot. If "dermatitis artefacta" is a hysterical manifestation, and (at times) it certainly is, this boy was a hysteric.

In conclusion, it is well to bear in mind that the correct diagnosis of these cases, satisfactory as it may be to the medical man, does not always determine their cure. The hysterical mute may continue mute for long enough; the "dermatitis artefacta," though its nature is exposed, will recur again and again. The boy whose case forms the subject of this paper, after recovering his speech completely, has now (April, 1916) relapsed into a curious "mumbling" or "lalling" speech, which is at times almost unintelligible. His mother, who had shown her incapacity to deal with the boy previously by the incident of the "dark cellar," has recently tried to cure him by a good "thrashing"! It has only made him worse. Such cases, as everyone knows, are most difficult to deal with. Sometimes the hysterical child is master of the household, or at any rate of that portion of it which counts; at other times the parent has no idea of how to deal with the nervous child. If these things had not been so, there would possibly have been no hysterical manifestations.

I am indebted to my former clinical clerk, Mr. F. G. E. Hill, for the notes of this case.

Sheffield.

[1] The Disorders of Speech, 1894.

[2] Hysteria in Boys, Quarterly Medical Journal for Yorkshire, vol. viii., p. 393.

A CASE OF PALPEBRAL CHANCRE.

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AND

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CASES of unmistakable palpebral chancre are sufficiently scarce to merit careful description. Moreover, early diagnosis is of considerable moment, alike from the standpoint of cure and prevention of infection. Microscopic examination of scrapings may detect the treponema pallidum, or the Wassermann reaction may be positive; but there can be little certainty in the early weeks, at all events, without such confirmation. In the following case, recently in hospital under our care, several features were not in accord with the usual text-book descriptions, and it illustrates the necessity of using all available diagnostic means.

The patient, a private aged 34, entered hospital on Oct. 28th, 1915. About 14 days previously his right eyelids were stuck fast in the morning; this continued each morning till admission. The lower lid then became swollen close to the nose, but there was little pain at any time. Two days before admission, when trying to open his eye, something "cracked," and he found a break in the swelling near its middle. When first seen the lower lid was œdematous for most of its length. The palpebral and ocular conjunctiva was injected, and a firm oval swelling, about the size of a hazel-nut kernel, extended from beyond the lower punctum to the inner canthus. Its upper surface was slightly ulcerated and covered by a dirty greyish film, leaving on removal a grey mottled surface with a few bleeding points. On palpation a sensation of hardness and induration was imparted by the swelling; indeed, this dense cartilaginous feeling, with the absence of marked pain on pressure, first aroused suspicion of a chancre. Incision through the conjunctival aspect yielded no pus, and on scraping, the tissue was found to be friable and to bleed freely. There was no glandular enlargement, and thorough scrutiny revealed no other signs of syphilis past or present. On the three succeeding days scrapings and serum from the ulcerated surface were examined for treponemata by dark-ground illumination, with negative results. A sample of blood, sent to Rochester Row for investigation, was reported on Nov. 13th as giving a positive Wassermann reaction.

During this interval the condition displayed no rapid tendency to increase. The ulceration spread somewhat in depth and inwards, involving the caruncle and a small portion of the upper lid. The edges of the ulcer were better defined, and the induration had become even more marked. The preauricular gland was now palpable; no definite enlargement of other glands. A first injection of kharsivan and mercury was made on Nov. 13th, when the first photograph was taken. (Fig. 1.) By the 16th the swelling was less than

FIG. 1.



Before kharsivan treatment.

half in size, induration had largely disappeared, and the ulcer showed a clean and rapidly contracting surface. Two more injections of kharsivan and four of mercury were given, forming a complete first course of treatment. By Dec. 2nd the lid was of normal outline, with complete disappearance of the swelling. Only a small fissure remained where ulceration had been deepest, and obstruction of the lower canaliculus followed due to ulceration. The rapid disappearance of ulceration and induration and the final healing of the sore within one week from the first injection of kharsivan formed a remarkable and gratifying spectacle.

The patient denied all knowledge of any possible source of contagion. In such cases the victim would rarely have any suspicion of the character of the infection, and thus its source can seldom be established. As in many instances, the infection here was purely accidental. He shared with 11 other men a common sleeping-room, and it is at least probable that a contaminated towel or finger conveyed the organism. In all likelihood some irritation of the eyelid existed. For instance, watering of the eyes is accompanied by frequent rubbing; this is likely to bring about irritation of the lids with more or less conjunctivitis, and also to introduce the infecting agent. Ramsay[1] describes a case where blepharitis existed before infection, and in our case watering of the right eye for three years followed facial erysipelas.

In the first two weeks the lesion is most apt to be confounded with a stye, and White and Martin[2] state that this mistake is frequent. The picture is of a reddened inflammatory swelling of an eyelid near the inner or outer canthus with some œdema, but no ulceration at first. The stye, however, is acutely painful and quickly shows a spot on the lid margin where pus is about to point; an incision will promptly relieve both pain and swelling, with evacuation of a variable quantity of pus. A chalazion is rarely seen on the lower lid near the inner canthus; it is, moreover, usually small, free from inflammation and pain. In acute dacryocystitis no confusion should arise, although

FIG. 2.



After kharsivan treatment.

this case was sent as such. The main swelling is over the area of the lacrymal sac and is not localised to the lower lid, apart from other distinguishing features.

When ulceration has taken place the floor is covered with a dirty greyish film, leaving on removal a bleeding surface. The margins are firm and fairly well defined and circumscribed, with some slight elevation. The whole swelling is remarkably firm; and this characteristic induration, felt when grasped between finger and thumb, is as in penile chancre the most convincing feature. Secondary ulceration of syphilis, lupus, rodent ulcer, and epithelioma ought rarely to present difficulty in diagnosis. The age of the patient, situation of the sore, previous history, and other indications should differentiate them.

Enlargement of preauricular, submaxillary and other glands is described as an early and constant symptom in chancre of the eyelids. In our case the preauricular gland alone was enlarged by the end of the third week, and swelling of no other glands could at any time be detected, though carefully sought for.

To recapitulate, a palpebral chancre may present the following features: a papular swelling of lower or upper eyelid near either canthus, accompanied by some œdema of the lid and injection of the conjunctiva, closely resembling a stye, but without much pain, and yielding no pus on incision; later forming a circumscribed ulcerating surface covered with greyish membrane, with slightly raised firm margins, and giving a characteristic cartilaginous feeling on palpation; and with or without enlargement of preauricular, submaxillary, and other glands. The presence of the treponema pallidum in surface scrapings or, failing that, a positive Wassermann reaction forms positive proof; while rapid disappearance and healing of the lesion under salvarsan treatment puts the diagnosis beyond a shadow of a doubt.

We have, in conclusion, to express our thanks to Colonel William Turner, R.A.M.C., O.C. Connaught Hospital, for his kindness in permitting the publication of this case.

BY an oversight, no acknowledgment was made in Sir StClair Thomson's article on Malignant Disease of the Nose or Accessory Sinuses, in THE LANCET of May 13th, of the courtesy of the Oxford Press Warehouse in lending the blocks of Figs. 2, 3, and 4, which were taken from Burghard's "System of Operative Surgery." We regret the omission.

[1] Maitland Ramsay: Atlas of External Diseases of the Eye.

[2] White and Martin: Genito-Urinary Surgery.

Medical Societies.

BRIGHTON AND SUSSEX MEDICO-CHIRURGICAL SOCIETY.

The Diagnosis of Nerve Injuries in War Time.

A MEETING of this society was held on May 4th, Major A. H. BUCK, R.A.M.C. (T.F.), the President, being in the chair.

Major C. F. BAILEY, R.A.M.C. (T.F.), read a paper on Diagnosis of Nerve Injuries in War Time. He mentioned the importance of not jumping at the conclusion that because it did not appear probable that a nerve injury could have occurred in any particular case, therefore no such injury had taken place. He emphasised the importance of careful search for sensory defects, particularly loss of epicritic sensibility, and mentioned various fallacies which might arise, adverting to the difficulties experienced with foreigners, malingerers, and patients of low degrees of intelligence. In Major Bailey's opinion condenser-testing was of the greatest value, and superseded faradic and galvanic muscle-testing. His method for obtaining extreme accuracy was to test doubtful muscles against normal muscles of the opposite side. He also referred to the difficulty experienced in preventing the powerful currents, which were necessary to cause contraction of damaged muscles, from overflowing and causing contraction of the damaged muscles' opponents, which in electrical treatment would be harmful instead of beneficial. The cases which had been operated on at the 2nd Eastern General Hospital had repeatedly proved the accuracy of the diagnosis as given by the condensers. He gave accounts of various cases of injured nerves—more especially of severed hypoglossal, spinal accessory, third and fourth cervical, posterior thoracic, ulnar, median, musculo-spiral, sciatic, and other nerves.

The PRESIDENT discussed cases of nerve shock. He inquired whether in cases in which the nerve is constricted, but not divided, paralysis of the nerve is shown by complete reaction of degeneration. If the nerve trunk is ruptured in its course does it recover function without operation?

Captain H. GERVIS, R.A.M.C. (T.F.), commented on the extreme accuracy of modern methods of testing, and asked how the difference in the skin resistance is allowed for.

Lieutenant-Colonel R. F. JOWERS, R.A.M.C. (T.F.), inquired as to the condition of nerves supposed to be functionally paralysed.

Dr. E. R. HUNT mentioned a case of local anæsthesia immediately following the extraction of a lower molar tooth, due presumably to injury to the mental branch of the inferior dental nerve.

Major BAILEY, in his reply, said that cicatricial constriction might produce complete reaction of degeneration. Complete or high degrees of reaction of degeneration indicated the advisability of exploration. If the nerve was torn across the ends might be so close that recovery was possible, but for practical purposes this was unlikely. The difference of skin resistance was got over by interposing such a large constant resistance that the variable skin resistance was negligible.

A vote of thanks to Major Bailey was proposed by Lieutenant-Colonel JOWERS and seconded by Captain GERVIS.

The annual meeting of the society was held on May 4th, Major BUCK being in the chair.—The annual report and balance-sheet were passed. Captain Gervis was elected President for the session 1916–17; Dr. Hunt financial secretary; and Major Bailey literary secretary.—Dr. L. A. PARRY proposed, and Dr. R. J. RYLE seconded, a vote of thanks to the retiring President for his services during the past year.

HARVEIAN SOCIETY OF LONDON.—A clinical meeting of this society was held on May 11th at the Stafford Rooms, Dr. Edmund Cautley, the President, being in the chair.—The following cases were shown:—Dr. Graham Little: (1) Case of Septic Papillomatosis of the Lower Extremity which had led to great overgrowth; and (2) a Soft Sore which had lasted 13 years and had led to extraordinarily extensive scarring.—Dr. F. Langmead: Intrathoracic Tumour in a Young Woman. The X rays revealed a shadow behind the upper part of the sternum and the microscopical examination of an excised portion supported the view that the mass was lymphadenomatous.—Dr. A. Stewart: (1) Multiple Osteomata developing in an adult male; and (2) a man on whom he had successfully operated for Temporo-sphenoidal Abscess.—Mr. C. A. Pannett: A patient with Stone in the Ureter. An X ray was shown with an opaque bougie in the ureter alongside the stone.—Dr. C. S. Jaffe: A woman with Enlargement of the Liver accompanied by jaundice.—Mr. Zachary Cope showed a photograph of the patient who survived for three days after an electrical burn caused by a current of 11,000 volts. Three limbs of this patient were destroyed by the current.

Reviews and Notices of Books.

Mosquito Control in Panama.

By JOSEPH A. LE PRINCE, C.E., A.M., and A. J. ORENSTEIN, M.D. With an Introduction by L. O. HOWARD, LL.D. London and New York: G. P. Putnam's Sons. 1916. Pp. 335. Price 10*s.* 6*d.* net.

THIS book describes in detail the eradication of malaria and yellow fever in Panama by Surgeon-General Gorgas, who had previously been responsible for a similar achievement in Havana. It is an absolutely authoritative book, for one of the writers, Mr. Le Prince, was the chief sanitary inspector to the Isthmian Canal Commission for ten years from 1904, the other, Dr. Orenstein, is an assistant chief sanitary inspector to the Commission, while Dr. Howard is the chief of the Bureau of Entomology of the United States Department of Agriculture.

Our knowledge of systematic antimalarial efforts previous to 1904 is largely based on the performances of Surgeon-General Gorgas in Cuba and of Sir Ronald Ross in the British Eastern dependencies, a great deal of which work is well known to all our readers. The situation on the Suez Canal before President Roosevelt appointed Surgeon-General Gorgas as chief officer shows that unless the American administration had acquired a real scientific knowledge of malaria the American engineers and workmen would have incurred the high sick-rate and appalling sacrifice of lives that proved the destruction of the original French plans. The Ancon Hospital, for example, is admirably placed in magnificent grounds, but if these had been maintained in their semi-tropical luxuriance entirely for the encouragement of anopheles, they could not have been more exactly designed. It is no wonder that during the first year of the work all the staff of the hospital were down with malaria. As soon as general sanitary work was fairly under way a preliminary survey was made for antimalarial purposes, when production areas of anopheles were found in every existing settlement and close to all the abandoned French camps.

The authors having set out the meteorological and topographical conditions and their bearing on the Isthmian anopheles, whose different species and areas of propagation are also described, detail under its various headings the campaign against the anopheles whose propagation areas were attacked. The first step in antimalarial work is the filling up of depressions that hold water; this process should be simultaneous with the introduction of effective drainage. With regard to drainage as an antimalarial measure the writers show in an interesting manner that the sanitarian and engineer look at the problems involved from different points of view. The number of factors that enter into good drainage with a view to controlling the propagation of mosquitoes are very considerable, and one thing inevitably suggests itself—namely, that the community which should attempt to get rid of mosquitoes in accordance with the drainage system advocated in this book would require a long purse. Economy, no doubt, in the long run would be served, but in the first instance a good deal of money as well as expert service is required. Attacks on propagation areas are spoken of with but moderate enthusiasm, and the larvicidal action of oil is said to be too slow; much oil also is required to cover the surface of the water, and its presence

is always more or less a source of danger from fire, while damaging the water for domestic purposes. These defects in the use of oil having been recognised in Panama, efforts were made to find a more desirable larvicide. A phenol resin soap devised by the chemist to the Board of Health of Panama is said by the authors to possess many advantages. For instance, it has a high toxicity to mosquitoes and a low one to higher animals; it can be used in a concentrated form without endangering the uniformity of its toxicity; its composition is simple and cheap, and its use is accompanied by no risks of fire. The authors allow that the ideal larvicide has not yet been found, for the phenol resin soap deteriorates upon exposure, does not emulsify readily, and is inert in brackish water.

At the end of the first part of the book, which deals with the whole antimalaria campaign in Panama, the results accomplished are summarised pithily in one small chart. The chart shows the hospital cases of malaria among employees from 1906 to 1913 inclusive, and is compiled by adding the monthly percentages of those sick with malaria. The figures are as follows: In 1906 82 per cent., in 1907 43 per cent., in 1908 28 per cent., in 1909 22 per cent., in 1910 and 1911 19 per cent., in 1912 11 per cent., and in 1913 8 per cent. The book, which is thoroughly readable, shows step by step how this remarkable alteration in figures has been brought about.

The story of yellow fever in Panama is naturally a much shorter one, as little but preliminary observation has been done. But the eradication of yellow fever in the Panama Canal is of equal importance with that of malaria, and we may expect that this disease, which is terribly destructive to the *morale* of the workmen as well as to their lives, will be dealt with systematically by a sanitary corps whose work has so far been brilliantly successful.

CURRENT GERMAN MEDICINE.

Yeast as a food.—Yeast as a source of proteid food material is attracting a good deal of attention. An article by Dr. Wintz, of Erlangen (MmW., No. 13[1]), gives a useful summary of its application. An institute for fermentation products in Berlin placed on the market about a year ago a yeast with the following percentage composition: proteid, 54; ash, 7; fat, 3; extractive, 28; water, 8—giving a calorie value of 4520 per kilogramme. The problem of making the production of yeast independent of that of beer had been successfully solved after five years' experimentation, and the new yeast is grown on a medium containing sugar, ammonia, potash, and magnesia, and produces no alcohol in its growth. The lay press has made much in this connexion of "proteid production from the air," since the ammonia is manufactured direct from the air by Haber's process. The nutritive qualities of the new yeast were first tested on his own family by Professor Schottelius, of Freiburg, and then in a Baden reformatory. In the University Women's Clinic at Erlangen Dr. Wintz introduced twice daily a dish of broth containing 10 grammes of yeast, the taste of which was found to be quite unobjectionable, and which was readily digested. The importance of such an addition to the diet sheet may be gathered from the fact that 20 grammes of this yeast contain 11 grammes of proteid, or about one-sixth of the total amount required in the day. At present the product is still expensive, 1 mark buys only 904 calories, which yet compares favourably with the 537 calories of beef. There is some prospect of reducing the price by the employment in production of the cheaper kinds of sugar, especially if the latter can be produced on a commercial scale from wood. Dr. Wintz concludes with the statement that the medical profession can now with a clear conscience recommend yeast for general use as a valuable foodstuff. Professor Rost, of Berlin, covers much the same ground in a review (DmW., No. 13) of a monograph on the economic significance of yeast as food, fodder, and pharmaceutical product, and calls attention to the use of a particular species—endomyces vernalis (Ludwig)—to produce a yeast rich in fat. He, too, concludes that the medical profession must recognise the value of yeast as a food product.

Employment for the blinded soldier.—Dr. W. Feilchenfeld, of Berlin, estimates (DmW., No. 13) at 800 the present number of soldiers totally blinded in the war for whom employment has to be found. Of the 34,000 blind civilians in the whole country, only 22 per cent. were earning a living, the majority at basket-, mat-, or brush-making and caning chairs. A period of training of two and a half to four years is necessary for work of this kind. Silex, in his monograph on "New Methods for the Care of the Blind" (Berlin, 1916), finds the average weekly earnings in basket-making to be only 8–12 marks. He considers this, therefore, not a suitable occupation for the blinded soldier. A few with the necessary gifts may become tuners or even organists. Typewriting, which Silex considers may occupy a quarter of the whole number, is regarded as less suitable by Dr. Feilchenfeld, as the blind typist can only write from dictation or dictaphone and cannot correct his own work. In peaceable times he can hardly hope to compete successfully with the man who can see. Silex therefore had the idea of himself looking round various large industries to search for any suitable occupation for the blind. In the Spandau munition works he found numerous blinded soldiers occupied with cartridges in various ways, mostly packing, and others back again at their old work as shoemakers, carpenters, and tailors. No long apprenticeship was necessary, and an average daily wage of 3.68 marks was being earned, which he thinks might rise in time to 4.40 marks. Silex proposes a travelling commission consisting of a factory inspector, an intelligent blind man, and perhaps a blind teacher, to seek in any large business some possible post in packing, tying, sorting, or serving of a simple machine suitable for a blind man. If the factory is in the country and the worker can live not too far away, he may be independent of any outside assistance and free, too, from any stigma of charity.

[1] MmW. = Münchener Medizinische Wochenschrift. DmW. = Deutsche Medizinische Wochenschrift.

JOURNALS.

Brain, a Journal of Neurology. Edited by HENRY HEAD, F.R.S. Vol. XXXVIII. Parts 3 and 4.—No. 3 of this journal consists of three papers. The first is on the postural activity of muscles and nerves by C. S. Sherrington, and is really a study of the often discussed subject of muscle tonus. It need scarcely be said that the paper from the pen of such a writer is interesting and suggestive, and it may also be said that it is most convincing. He shows clearly that as regards skeletal muscles the tonus is reflex, and that it is confined to those muscles which maintain the animal in an erect position, in other words, that reflex tonus is postural contraction. The visceral muscles and those of the circulatory system are also studied, and the tonus in them is found to be of the same character.—The next paper is an elaborate study of muscle tonus, by Professor Langelaan.—The third paper is by Professor Walter Ransom, of Chicago, on Nerve Fibres as Conductors of Protopathic Sensation, in which evidence is brought forward to show that protopathic sensation is probably subserved by the unmyelinated fibres in a nerve.

No. 4 also contains three papers. The first is the address delivered by Dr. James Taylor, as President of the Neurological Section of the Royal Society of Medicine, on the Ophthalmological Observations of Hughlings Jackson and their Bearing on Nervous and Other Diseases. An abstract of this address appeared in THE LANCET in November last. It is an appreciative review of the valuable ophthalmological work of an accurate observer, and a great man.—The second paper is by Dr. Ramsay Hunt on the Sensory Field of the Facial Nerve, and he adduces evidence which seems almost conclusive that the facial, like the trigeminal, glosso-pharyngeal, and vagus nerves is to be regarded as a mixed sensory and motor nerve, the sensory part being concerned with the innervation of the internal ear, the middle ear and its prolongation into the Eustachian tube and mastoid cells, and the skin on certain parts of the external ear.—The third paper is by Dr. Byrom Bramwell, Dr. Shaw Bolton, and Dr. William Robinson on Bilateral Lesion of the Occipital Lobe, with Retention of Macular as Distinct from Panoramic Vision. The case is an exceedingly valuable one in that the patient was under periodic observation for no less than 24¾ years, and the post-mortem examination confirmed the diagnosis of "bilateral lesion in the occipital lobes," made 24 years before death occurred. The clinical record, with charts of the fields at different times, is unusually complete, and the very full account of the post-mortem examination, with numerous plates illustrating the condition of the brain, renders the case a very valuable one in reference to the anatomy and physiology of human vision.

The Military Surgeon.—In the April issue Dr. Thomas W. Jackson, who was with the American Red Cross Sanitary Commission in Serbia, describes briefly and classifies the miseries which war brings upon women, children, the aged, and other non-combatants who are within its area. Vivid as are his pictures, none, he says, but eye-witnesses can realise how intense, how widespread, are these miseries and afflictions. The chief, the universal, the inevitable accompaniment of war is food shortage and consequent malnutrition, it may be even starvation. How frequent a form of death this was in the dawn of history is seen by anyone who remembers that the word "starve" originally meant *die* in quite a general sense, and the corresponding German *starb* still means *he died.* In other words, when language was forming starvation was the most ordinary form of death. The food shortage tells first on infants and nursing mothers and the weakly. Both the distribution and the production of food are interrupted. Thus, on the Kossovo Plain in Serbia Dr. Jackson saw great fields of ripe, much-needed wheat, unharvested for want of labour. From his experiences in similar conditions of war and famine in Cuba and the Philippines, our author feels that few nations would have saved so much food as did the frugal and industrious Serbians. The destruction of houses is the next most important disaster, the houses knocked to pieces and their inhabitants crowded into others they are lucky indeed to find, for they may be driven into the open. Overcrowding is bad, but to be defeated, roofless, starving, and frozen, is the culmination of bitterness. With overcrowding there is dirt; where there is little bread there is less soap, and infected lice and bed-bugs have more chance to spread typhus and relapsing fever when a bed is occupied not by one person exclusively but by two or three at a time, and that two or three times over every day. Prostitution, too, becomes rife when women have lost their natural protectors, and Dr. Jackson urges that this fact be considered by those who refuse in peace time to provide armies to prevent war. When all the doctors are required for the army there is no medical treatment for non-combatants, neither are there drugs for them, another cruel affliction that the American Red Cross worked hard to alleviate. In spite of all these horrors under which Serbia has groaned, Dr. Jackson feels her heroic spirit can be counted upon to survive for ever.

A reserve of officers.—The medical corps of the United States Army had set up for itself a reserve of officers for war service long before any other section of that army had so provided itself. The medical staff of the organised militia, which corresponds roughly to our Territorial Army, does not want to fall behind that high standard set, and as rather less than half of its established number of field hospitals and ambulance companies only are constituted, it is casting about to encourage the formation of the others, and in this number of the *Military Surgeon* Major Hess, one of the officers at headquarters, details the assistance the Federal Militia Department will give to a newly-raised unit. As soon as it has passed inspection, and it is thus known that the authorised number of men have joined and are physically and otherwise fit for enrolment, that they have headquarters sufficient for drill and for the care of Government property, and that the State (that is the province) has made arrangements for their maintenance, all uniforms and equipment will be issued to them free of charge, and when required regular officers will be detailed to instruct them, and the units will be sent to camps of instruction for 10 to 15 days each summer. It is noted that they may be mobilised not only for war but in cases of dire industrial or natural disaster, such as mine explosions, floods, and earthquakes, which will make their service more useful and more interesting.

New equipment for the "hospital corps" soldier.—The "hospital corps" soldier of the United States is to have a new equipment we learn from the same number of this journal. It has been evolved by a board of three junior officers, and is based on the new equipment of that army for its cavalry. The special equipment of the "hospital corps" soldier is all carried in his belt on which are ten pockets and a frog for a small hatchet. Eight pockets are large enough to take two first dressing packets each and the five at the back do so, the remaining three and the half-size pocket on each side in front carry other things, iodine, swabs, sal volatile, scissors, diagnosis labels, &c. Wire gauze for making splints is no longer on the establishment, plenty of materials to take its place being available on every battlefield. The new equipment is lighter than the old, there are no straps across the soldier's chest, he can ride with it just as well as march, and it will wear better. Numerous photographs are given of this workmanlike outfit. The weight is not mentioned.

The Indian Journal of Medical Research, Vol. III., No. 3.—In continuation of his previous studies of experimental cholera infection, published in this journal, Major E. D. W. Greig, I.M.S., contributes a further series of observations on the lesions of the biliary passages of rabbits dying after repeated intravenous injections of living cholera vibrios. Cholecystitis, with or without gall-stone formation, is apparently a frequent cause of death of rabbits so treated. With a view to throw more light on such questions as gall-stone formation and the carrier problem in cholera Major Greig has made a number of fresh experiments, full details of which are now given in his paper. He also furnishes a second contribution on the alteration in serological and morphological characters of a strain of cholera vibrio. Both of these papers are illustrated by coloured plates, charts, and tables.—Major S. R. Christophers, I.M.S., supplies two articles, the first dealing with the revision of the nomenclature of Indian anophelini, to which is appended a long list of references; his second paper describes an Indian tree-hole-breeding anopheles, A. Barianensis, James = A. (cœlodiazesis) plumbeus, Haliday.—The male generative organs of some mosquitoes form the subject of a contribution, with illustrative plates, by Mr. Baini Prashad, M.Sc., Alfred Patiala Research Scholar, of the Punjab University, Government College, Lahore, who also furnishes a second paper on the Halteres of the Mosquito and their Function.—Mr. P. R. Awati, medical entomologist of the Central Research Institute, Kasauli, continues his "Studies on Flies," his present paper being entitled "Contributions to the Study of Specific Differences in the Genus Musca." This is illustrated by 19 plates.—Mr. J. L. Mitter, entomological assistant at the Kasauli Central Research Institute, writes on the life-histories of (*a*) Hæmatobia sanguisugens, Austen, an Indian species of blood-sucking muscid; and (*b*) Bdelloralarynx sanguinolentus, Austen, a purely Oriental species.—Major J. W. Cornwall, I.M.S., director of the Pasteur Institute of Southern India, Coonoor, writes on "Some Centipedes and their Venom," with five illustrative plates.—A short description is given by Major A. G. McKendrick, I.M.S., of a method for the rapid demonstration of Negri bodies, illustrated by a coloured plate drawn by Miss Gladys M. Brown.—Lastly, the number closes with a very interesting editorial on malaria and jungle clearing, in which attention is drawn to the recent scientific research on malaria, carried out in the Federated Malay States, and its application to practical measures. Notice is also directed to the fact that India for some time past has been playing a part as a pioneer in this type of investigation. The editorial concludes with a word of caution. To demand, it says, on the strength of results of the clearance of wet low-lying primeval forest in the Malay States, as described by Dr. Malcolm Watson and others, similar operations with similar results in Bengal, is the outcome of a misconception. Jungle-clearing operations do not necessarily work only in the way that has been so successful in the Malay States, and "the influence of jungle of various kinds on the causation of Indian malaria makes the subject of this association one demanding unbiassed and careful consideration and experiment."

The Journal of the Canadian Medical Association.—In the issue for April there appears an account by Sir James Grant of some of his early experiences as physician, and the final paragraph, which is headed "Serum Therapy in 1861," is a distinctly interesting note. It runs as follows:—

In 1861 my general health was on the decline from an unknown cause, which I concluded resulted from some poisonous influence, contracted while on duty, General Protestant Hospital, Ottawa; never contracted syphilis or anything of that character. I made every effort to regain my usual health and strength without evident success. In 1861 was invited by the late Dr. Hamnett Hill to assist in a surgical operation in the General Protestant Hospital, and contracted blood poisoning—the outlook most unpromising. After several weeks' serious illness made an excellent recovery, my system regaining in every particular the normal state of health and vigour. To account for such a marked constitutional change for the better aroused in

my mind the idea, one poison had actually counteracted another. It then struck me to test the effect of serum of ordinary vaccine lymph, in skin disease, particularly psoriasis, and with most practical results. On February 20th, 1863, after three years' careful research, published a record in the *Medical Times and Gazette*, London, England. From that date to the present I have enjoyed perfect health, never absent from duty a single day. At that time, owing to the remarkable results of vaccine serum in disease, I felt we were on the eve of a great change in therapeutic serum power, and placed in my paper of 1863 a paragraph in large type that "man has still much to learn." Since that date Virchow, Pasteur, Koch, Lister, Wright, and Flexner have revolutionised the domain of bacteriology by remarkable scientific achievements. Since 1861 I have frequently used the serum of vaccine, as an alterative in cases of constitutional debility, with excellent results.

The claims of the different pioneers in serum-therapy have never been altogether settled. Richet and Héricourt laid their papers in 1888 before the Academy of Sciences in Paris showing their experiments and conclusions, but the underlying ideas had occurred to other pathologists, as 27 years previously they had occurred to Sir James Grant, and he informs us that last year he received a letter from Dr. Fielding R. Garrison, of the Surgeon-General's Library at Washington, as follows: "So far as I am able to determine from an examination of the literature indexed in this Library, your interesting cases would appear to be the first in which vaccine virus was definitely employed for the treatment of diseases other than small-pox."

Sir James Grant was born at Inverness in 1831 and qualified as M.D. McGill in 1854, and in 1864 became M.R.C.P. Lond., M.R.C.S. Eng., and F.R.C.S. Edin He was knighted in 1885, and has been President of the College of Physicians and Surgeons, Ontario, and of the Royal Society of Canada. He has written on the knee-joint, on heart disease, on tetanus, on orthopædics, on tuberculosis, and on other medical, surgical, and scientific subjects in the journals of Canada, the United States, and this country, and is, moreover, a geologist of repute. During his political career he introduced the Pacific Railway Bill to construct the present trans-continental railroad, and few medical men can have lived a fuller life.

Reports and Analytical Records
FROM
THE LANCET LABORATORY.

(1) PROTOSIL; (2) PINEAL GLAND TABLETS; (3) ANTI-TYPHOID-PARATYPHOID VACCINE; (4) TYPHOID-PARATYPHOID AGGLUTOMETER; (5) ARGENTIDE VAGINAL SUPPOSITORIES.

(PARKE, DAVIS, AND CO., BEAK-STREET, REGENT-STREET, LONDON, W.)

1. Protosil is a dark brown hygroscopic scaly substance which readily dissolves in water. It is a proteid silver compound, and according to our analysis contains close upon 20 per cent. of silver. as is claimed. It presents the advantages of not being precipitated by alkalies or by reagents which generally decompose the ordinary silver solutions. It does not coagulate albuminous matter nor does it react even with a chloride. It is stated to be non-toxic even in strong solutions and to be free from irritating effects. It is suggested for use as an antiseptic and astringent in inflammatory conditions of the mucous membrane and as particularly serviceable in uro-genital conditions.

2. The pineal gland tablets represent the activity of the fresh pineal glands of young cattle. The action of the pineal body is interesting in its influence upon mental and physical development up to the time of puberty. The substance has thus been given in cases of backward children and also of premature mental failure in later life. It is said to have a definite stimulating effect upon the sluggish brain.

3. The anti-typhoid-paratyphoid vaccine is contained in ampoules and is convenient for administration for immunisation purposes, and the practice now is to immunise against both typhoid and paratyphoid by administering the respective vaccines simultaneously. This combined vaccine is prepared in the inoculation department of St. Mary's Hospital, London, under the supervision of Sir Almroth Wright.

4. The typhoid-paratyphoid agglutometer comprises a small compact set of apparatus to be used in the differential diagnosis of typhoid and paratyphoid fevers. It contains one ounce each of typhoid and paratyphoid suspension and the usual appliances for collecting the blood and for making the test. The case containing the apparatus measures only 4¼ inches long, 2½ inches wide, and 3¼ inches deep. It is designed to obviate the use of the microscope and fresh live cultures of typhoid and paratyphoid bacilli in the agglutination test. It is stated that laboratory and clinical experiments have shown that the use of the apparatus produces results equal in delicacy and efficiency to the microscopic method, while its conveniences are obvious.

5. The argentide vaginal suppositories consist of soft gelatin cones protected by a tin wrapper. The germicide present, as we have found, is a solution of silver iodide. It is claimed that this salt is superior to silver nitrate inasmuch as it is more stable, less irritating, and does not stain.

"SOLOID" NASAL ALKALINE COMPOUND.

(BURROUGHS, WELLCOME, AND CO., SNOW HILL BUILDINGS, LONDON, E.C.)

This well-known and useful formula in the treatment of the nasal passages has recently been modified by the addition of cocaine hydrochloride. This addition renders the application of the spray or douche acceptable in the treatment of acute conditions in which pain is a feature. The soloids, each of which contains 5 grains of borax, 5 grains of sodium chloride, and 1/6th grain of cocaine hydrochloride, dissolve readily when powdered in warm water, and one soloid dissolved in two or three ounces of water gives for general purposes an antiseptic fluid which can be used in the form of a spray or douche in rhinitis, ozæna, and so forth. The original soloid without cocaine hydrochloride is still supplied.

LYSOL (L. BRAND).

(LYSOL, LIMITED, CRAYFORD MILLS, WARTON-ROAD, STRATFORD, LONDON, E.)

The claims made in regard to the advantages of this preparation are confirmed by our examination. One important point is that it is quite without free alkali; so much so, that its solution in water gives no reaction whatever with the delicate phenolphthalein test. Further, it is not made with caustic soda, but with caustic potash. We obtained marked evidence of the presence of potash salt. The preparation is not only miscible with water, but, as we have found, with alcohol, glycerine, and even chloroform. It is evidently, therefore, a very pure combination of potash soap and cresol. Whilst it is an active detergent, preparing, so to speak, the ground for the action of the antiseptic, it is non-caustic. On separating the soap by means of alkaline lime solution we obtained a yield of cresols amounting to just 50 per cent. Amongst preparations of its kind this is evidently a standard product and one over which particular care is exercised to secure an article constant in composition and antiseptic value.

LA GIRALDA: SPANISH WHITE WINE.

(ROBERT JAMES, SON, AND CO., 17, STORE-STREET, BEDFORD-SQUARE, LONDON, W.C.)

As is well known, Spain produces good wines, and they are, generally speaking, fuller in character than the wines of France. The white wine under examination, however, shows a comparatively low alcoholic strength and resembles a light Sauterne. It is pleasing in character, with a delicate flavour of the grape, while coming well within the category of light wines. According to our analysis, the following was its composition: alcohol by volume, 10·73 per cent., equal to proof spirit 18·81 per cent.; extractive matters, 2·25 per cent.; mineral matter, 0·10 per cent.; sugar, 0·50 per cent.; volatile acidity reckoned as acetic acid, 0·08 per cent.; fixed acidity reckoned as tartaric acid, 0·49 per cent. It is a genuine good unfortified wine free from objectionable preservatives, and is quoted at a moderate price (20*s.* per dozen) considering its attractive qualities.

Sir George Hare Philipson, M.D., F.R.C.P., professor of medicine in Durham University since 1876, attained the age of 80 on May 18th.

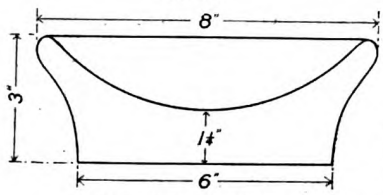
New Inventions.

AN INGENIOUS CRUTCH-HEAD.

WE have received the following letter:—

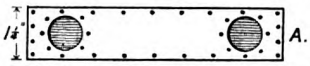
SIR,—I am venturing to ask for your criticism of the crutch-head which I send herewith. It is of a pattern issued in considerable numbers from the Kensington War Hospital Supply Depôt, 13, Kensington-square. In the past year this depôt has turned out many hundred pairs of similar heads stuffed with a mixture of tow and lyxhayr (the well-known fibre substitute for horse-hair); but it seemed to those responsible for the output of the upholstering department that something affording more "resiliency" was desirable, and, thanks to the kindness of Mr. W. L. Bradbury (a most indefatigable and energetic worker at the Depôt), we have been able to make use of some old inking-rollers of the *Punch* Printing Office, with which he supplied us. The head sent is filled with this composition. The substance melts at a comparatively low temperature (it is believed at about 120° F.), and after having been slowly liquefied is poured into a "shell," or half-covered crutch-head, laid on its side. If melted quickly or by too fierce a heat, the composition bubbles and, in cooling, subsides awkwardly. In order to prevent its flowing down the sides of the head when exposed either to a hot sun (or possibly to the heat of an ordinary fireplace), gimp-pins are placed at close intervals round the frame of the head, as shown in the rough drawing sent. But it is hoped that in moderate temperatures and with ordinary care the danger of liquefaction is small. In our conceit we think that there is a pleasing compactness and an elasticity about these heads which is not generally observable in most others of amateur manufacture; but, as I commenced by saying, I beg *your* criticism and advice.

FIG. 1.



Beech head with webbing.

FIG. 2.



Bottom of the head. Distance from edge A to centre of the hole which receives the crutch stick is 1 inch. The nails at the end have ⅝ heads: the others may be ⅜.

FIG. 3



Head and end upholstered, nailed and finished.

I am, Sir, yours faithfully,

ARTHUR DENMAN.

Kensington War Hospitals Supply Depôt,
13, Kensington-square, S.W.

*** The crutch-head seems to us an ingenious and comfortable contrivance. The curves are well designed, and there is sufficient elasticity in the material of which the head is composed to constitute a springy support. We have subjected the head to a temperature of 110° F. and find that it maintains its shape, so that the temperatures of every-day experience would not restrict its use. We have examined a piece of inking-roller used in our printing-room and find that its melting point lies between 119° and 121° F. This confirms Mr. Denman's statement. The material warmed at 120° F. assumes a thin treacly consistence which enables it to be poured into a receptacle in the way described. It therefore seems well adapted for the purpose and is very comfortably resilient, but it may be pointed out that one of the ingredients of the composition is glycerine and this is apt to get moist. The smooth stuff with which the head is covered, pluviusin, is neat to look at, easily upholstered, and readily cleaned. The crutches are not sold; they are made at the Kensington War Hospital Supply Depôt at an extraordinarily small cost, and are distributed to authorised societies and institutions on application.—ED. L.

NATIONAL HEALTH INSURANCE.

Marked Bottles.

THE London Panel Committee has noted that by the Drug Tariff of 1915 druggists were obliged to supply medicine in bottles marked so as to guide the patient in taking the prescribed dose. Marked bottles are, however, not ordered by the 1916 tariff. This is, no doubt, due to the difficulty in obtaining glass bottles of any kind owing to the war, and the same cause prevents druggists from supplying marked bottles even if they should be willing to do so. The result is that medicine is taken in improper quantities and wasted. The most practicable remedy would seem to be the affixing to plain bottles strips of paper marked to indicate the dose prescribed. These could be enforced by regulation and printed to suit bottles of the usual sizes, when it would rest with the druggist to be careful to affix the right strip to the bottle. Graduated medicine glasses have equally been rendered costly and difficult to obtain.

Drugs Supplied in London.

The accounts for the last three years show that the number of prescriptions dispensed to insured patients in London has decreased from year to year; that the average cost per prescription was markedly higher in 1915 than in 1913 or 1914, and that in 1914 it was slightly higher than in 1913. The figures are: 1913, 5,041,555 prescriptions, total cost £155,516, average cost 7·4*d.*; 1914, 4,871,108 prescriptions, total £188,236 0*s.* 6*d.*, average 9·3*d.*; 1915, 4,344,868 prescriptions, total £142,615 5*s.* 2*d.*, average 7·87*d.* Probably several causes have contributed to the falling off in the number of prescriptions made up. There may have been at first a tendency to consult a medical man and to get a bottle of medicine not altogether necessarily, and the attraction of novelty surrounding such a proceeding may have worn off. Beyond question a large number of insured patients are serving in the army or, for reasons connected with war service, absent from home. It is, however, no less important to remember that increased facilities for medical attendance must have a potent effect in preserving the health of the working classes; and also that the high wages which war has produced will have procured better nourishment for many who before were underfed. Some day we shall be able to compare the statistics of peace with those of wartime.

The London Panel Committee and the Question of an Election.

The medical practitioners on the London panel have had their notice called to the new regulations issued by the Commissioners, which enable the period of office of present members of Panel Committees to be extended for a period of not more than 12 months after the end of the war. The members of the panel in any area may press for the holding of the usual annual election, in which circumstances the Commissioners may declare that the regulations above referred to do not apply to that area. In the absence, however, of a collective expression of opinion being received to the effect that an election should be held, the present members of Panel Committees will be deemed to be re-elected.

Bolton Insurance Committee.

At Bolton, in connexion with a decision to surcharge three medical men in respect of alleged extravagance in prescribing, Mr. J. A. Swainson on the consideration of the report pointed out that the Drug Fund had never been sufficient for the purpose for which it was designed. He considered that the Insurance Committee of Bolton should make known its opinion that in town districts there was need for an increase of the sum available for the treatment of insured persons. It had been said at various times that medical men were extravagant in prescribing, but in the case of the three medical men who were being surcharged deductions were being made in consequence of a deficit in the Drug Fund. Medical practitioners could not prescribe as they did before. He knew from his own experience that he could not do so unless he was willing to be fined for so doing, and he had himself only just escaped from being surcharged.

THE LANCET.

LONDON: SATURDAY, MAY 20, 1916.

Infantile Mortality in Scotland, and the Nation's Future.

THE third "Report on Infantile Mortality in Scotland," which includes the proceedings of the National Association for the Prevention of Infant Mortality and the Welfare of Infancy, has been recently laid before the Convention of the Royal Burghs of Scotland by Mr. D. W. KEMP, and it emphasises so many of the lessons inculcated by Dr. S. G. MOORE in his Milroy Lectures[1] that we need no better reason for returning to the whole of this important subject. In particular the report lends force to the important points to which Dr. MOORE called attention, when urging the necessity for measures specifically directed against infant mortality, if the State desires to check disastrous wastage. Sanitary effort, the demolition of slum dwellings, the supervision of food, including the milk-supply, the advancement of medical and obstetrical science, have been no less conspicuous during recent years in Scotland than elsewhere in the United Kingdom, but the yearly loss of infant life remains much as it was 60 years ago. A chart, which is published in this report, shows the rise and fall in the number of deaths of children under one year old per 1000 births in Scotland from 1855 to 1915. It proves that in 1915 these deaths stood at a point or two above what was reached in 1855, when they amounted to 125 per 1000. It also shows that the highest figure was recorded so recently as 1897, when it came near to 140, and that if the lowest (106 per 1000) occurred in 1912 it was only less by three or four than that registered in 1859 and later in 1879. The criticism and comparison of particular figures may be relatively unimportant, but the general deduction which follows from them must command attention. It is that for more than half a century infant mortality in Scotland has exhibited no substantial improvement, and that if its ravages are to be resisted we must initiate and press forward suitable measures. Such measures must combine with, and be supplemented by, improved conditions of life affecting adults as well as infants, and be under the guidance of medical science, as sanitary legislation has been, but they will have to be devised for the special benefit of the mother and the infant, and concentrated upon them through the agency of workers specially trained for the purpose. The report of the National Association, to which we have referred, notes the enrolment of 222 students for the advanced course of lectures on infant welfare, and observes that these "will eventually be scattered over the world." The number, no doubt, is not great when the magnitude of the field thus indicated is taken into account, but allowance must be made for an exceptional period in which an enormous number of women are being absorbed into the profession of nursing. No doubt many of those who never contemplated a nursing career before the war will find themselves after it is over imbued with a new interest in the welfare of their fellows, and from their ranks may be drawn some at least who will work for purposes of infant welfare.

A circular of the Local Government Board for Scotland, dated August 15th, 1915, is referred to in Mr. KEMP'S report, which, in summarizing the general policy indicated, calls attention to a detail which is of interest. In connexion with the earning of Treasury grants, it is noted that contributions made by local authorities to institutions may rank for such grants, but that no grants will be made direct to any institution. Mr. KEMP refers to this as a distinction between the administration of the funds in England and in Scotland, and ascribes the decision to grant only through the local authority to the desire to avoid overlapping, in which he is probably right. A further observation which he makes in this connexion is not without a distinctive national touch. "What, however," he says, "we must jealously guard against is that England does not get more proportionately out of the Treasury than Scotland." He possibly expresses this unexpected anxiety because, as he points out, there have been some few schemes approved by the Local Government Board before the Scottish authorities have been able to propose theirs. England, to quote his expression, has got a little ahead. We are certain that no unfair competition on the part of any section of our common island need be apprehended, and that all medical men and all social workers desire to see Scotland and England working in rivalry indeed for a common end, but combining in honourable conspiracy to secure as much pecuniary aid towards that end as the necessary economy of the Chancellor of the Exchequer will sanction their receiving. The justice of the demand which they will emphasise when appealing for assistance to combat infant mortality will be admitted by all, but for the present at any rate, as Mr. KEMP himself points out, in the national crisis caused by the war a large grant cannot be expected. One of the strongest arguments for a great increase of the grant hereafter will be that by saving infant life from avoidable destruction we shall be lessening the certain results of war upon our population.

In our issue of Jan. 29th we published a communication from a contributor who suggested a scheme for the reduction of infant mortality by what he described as "a system of vicarious adoption." By this a central body, and through its intervention particular subscribers, would take direct personal interest, without legal responsibility, in expectant mothers of the poorer classes and in their babies when born. In a leading article on the Conservation of Infant Life in the same number of THE LANCET we called attention to this proposal, which we described as one for bringing the public into close

[1] THE LANCET, April 22nd (p. 849) and 29th (p. 896), and May 6th (p. 943), 1916.

and sympathetic relation with the whole problem of infant welfare. Mr. KEMP in the report under discussion indicates an approval, which we are gratified at having won, by printing our article and the communication of our correspondent for the information of the Convention of the Royal Burghs of Scotland. We hope, and indeed have no doubt, that full consideration will be given to both by that ancient and honourable body, and we believe that it is by no means impossible that the movement suggested, if once set on foot and efficiently organised, might achieve considerable success. Sympathy with "lonely soldiers" at the front has, as is well known, produced for them "fairy godmothers." These have not only sent them parcels of delicacies to supplement their rations, but have done their best to cheer them with letters in the trenches. It may be that the "fairy godmother" idea will meet with a similar welcome when applied to actual infants, and that "godfathers" who will undertake a certain pecuniary obligation will not find themselves excluded. In Scotland, as in England, there is ample room for voluntary agencies to work side by side and in combination with official bodies, for the war has only emphasised for the whole kingdom the need for vigorous and concerted action.

The Diseases of Active Service.

THE majority of the diseases from which our troops are suffering whilst on active service are the same as those which occur in time of peace. Rheumatism (articular and muscular), bronchitis, pneumonia, disorders of digestion, are met with very frequently; certain infectious diseases, notably dysentery, are inseparable from a campaign, but by no means unknown in times of peace or among civil populations. Fortunately in this war, typhoid fever, which has so often caused the death of vast numbers of soldiers, has been rendered far less virulent owing to preventive inoculation. The tendency to regard certain diseases as peculiar to service in the field has shown itself mainly in the adoption of various terms such as "trench feet," "trench fever," "trench nephritis," "shell shock," and so on, but those who employ these names, mainly for convenience, are aware that further investigation and research are being carried out in regard to the etiology and nature of these conditions, and that it would be imprudent to conclude hastily that they are essentially different from those which occur amongst the civil population at ordinary times. The term "trench feet" has been adopted in place of "frost-bite" because it was found that exposure to cold and wet at a temperature above that of freezing-point would produce the phenomena hitherto associated with extreme cold, although the morbid changes appear identical. The exact nature of "trench fever" has not yet been determined. It is possible that it is a distinct infection, although some physicians are of opinion that it is of an influenzal nature, and certainly further research is necessary before it can be definitely given a place in any official nomenclature. A large number of men have been admitted into the hospitals with albuminuria, and the term "trench nephritis" has been used to designate the condition. Here, again, some observers maintain that a definite infection is responsible for the numerous cases which have presented themselves, and that therefore the etiology is different from nephritis as met with amongst civilians. But some further work on the subject will have to be done before this conclusion can be adopted.

The term "shell shock" has been used to include certain symptoms which are found in men who have been in the actual firing line. Some physicians desire, and very logically, to confine this term to the symptoms appearing after a man has been rendered unconscious by shell explosion, although no actual bodily injury has been sustained, but similar symptoms also occur in soldiers who have been simply exposed to shell fire without becoming unconscious. The question arises whether this condition essentially differs from the conditions produced in ordinary phases of life by shock of various kinds to the nervous system. Traumatic neurasthenia has long been recognised, and shortly after the passing of the Workmen's Compensation Act many men made claims under the Act who were suffering from a variety of symptoms to which the term "traumatic hysteria" was rightly applied. Such cases still figure frequently in many industrial practices. Many of the cases which, because they occurred at the fighting front, have been diagnosed as shell shock might probably be placed in the same category as the industrial cases. The symptoms vary greatly both as regards nature and severity. Some of the patients suffer for months in spite of most skilful treatment, whilst others recover speedily under electrical or other suitable measures. An interesting example of shock producing nervous symptoms is described in our columns this week by Major A. J. HALL—in civil life Professor of Medicine in the University of Sheffield—under the title "Hysterical Mutism in a Boy." Major HALL'S patient had been knocked down by a taxi-cab three years before, and since that time, instead of being a bright, intelligent lad, had become heavy in appearance, lethargic in his movements, and slow at learning lessons. In December, 1914, he was at Hartlepool when the bombardment took place, and for a time he was very excited, but reverted to his previous dull mental state. In June, 1915, he was in a village where a factory was blown up by an explosion of great violence, and again he became temporarily very excited, and subsequently his behaviour grew strange. In December, 1915, he was operated on for removal of adenoids, and from that time he became absolutely mute. He remained thus for between five and six weeks, when early one morning he was much frightened by a man in the ward, and he at once shouted for the nurse. A considerable number of cases of mutism attributed to shell explosions have been recorded, and it is quite possible that they have been instances of hysterical mutism. Major HALL'S patient, in fact, seems to form a link between the hysterical mutism of peace and the mutism occurring under war conditions. The boy had been exposed for a short time to shell fire and had been in close proximity to an explosion, but it was reserved for an ordinary

surgical operation of everyday occurrence in civil life to supply the back-breaking straw and determine the onset of the condition. We agree with Major HALL in his remark that in the soldier of neuropathic tendency the conditions of modern trench warfare must produce psychical shocks quite overwhelming in their cumulative action—a summation of stimuli.

Some of the doubts we have suggested as to the correctness of the nomenclature now being adopted can only be satisfactorily cleared up after the lapse of a considerable period of time, owing to the investigations which will have to be made. In the meantime it is interesting to note that the army medical authorities insist that all disabilities sustained by officers and men should be recorded on board papers and medical history and case sheets in strict accordance with the nomenclature of the Royal College of Physicians. The terms "trench feet" and "shell shock" will not be found therein, and consequently "frost-bite" and "neurasthenia" or similar terms must be substituted. The exact nature of the symptoms and signs should, of course, be mentioned in the notes, so that when the records are required for the purposes of investigation they may indicate the phenomena which existed and the circumstances under which they arose.

Annotations.

"Ne quid nimis."

CEREBRO-SPINAL FEVER: REPORTS TO THE LOCAL GOVERNMENT BOARD.

A RECENT volume[1] (New Series, No. 110) of reports to the Local Government Board on public health and medical subjects contains reports by five different contributors upon the important work on cerebro-spinal fever which has been done during the last 18 months. A preliminary memorandum by Dr. A. Newsholme, medical officer of the Board, summarises the information contained in the other reports. He states that while it was recognised in last year's outbreak that great diagnostic value attached to the discovery of meningococci in the cerebro-spinal fluid of patients suffering from meningitis, it was then doubtful what measure of importance should attach to the finding of meningococcus-like organisms in the naso-pharynx of contacts with cases of cerebro-spinal fever. This point was therefore made the subject of special inquiry, and is dealt with at length in the reports of Dr. A. Eastwood, Dr. F. Griffith, and Dr. W. M. Scott on the prevalence of meningococcus-like organisms in the naso-pharynx of persons attending certain metropolitan out-patient departments during part of 1915. The patients in question had not, so far as could be ascertained, been in actual contact with cases of cerebro-spinal fever, but as there was a considerable number of cases of this disease occurring in London and elsewhere at or about this time, the probability of such absence of actual contact is relative rather than absolute. Dr. Scott also reports on a similar examination, including one made at a rural school in Kent. The result of these investigations was the discovery in more than 10 per cent. of non-contacts in London of organisms indistinguishable from meningococci by microscopic, cultural, and fermentation tests. Among the 56 Kentish school children, however, only one gave a positive result. In commenting on the largeness of the London figure, Dr. Eastwood emphasises four special circumstances: (1) that the cases examined were hospital out-patients; (2) that the swabs were taken by an expert and thus the overgrowing by mouth organisms reduced to a minimum; (3) that a special culture medium (Kutscher's) was employed; (4) that much time was given to searching the plates. He holds that, until the serological relationships have provided definite evidence to the contrary, each of this large percentage of organisms must be regarded as possibly capable of producing cerebro-spinal fever. It is on this point that differences of opinion exist. Dr. Eastwood's attitude is a scientific one, but from the point of view of the practical administrator it may be more convenient to refuse to promote the meningococcus-like organisms found in the throats of these non-contacts to the rank of meningococcus merely because they resemble that organism in cultural and fermentative characters. If we read the report correctly, out of 49 meningococcus-like organisms collected from 480 non-contacts only 28 were submitted to serological examination, and of these only five qualified as that micro-organism by absorption tests. The naso-pharynx is the habitat of Gram-negative cocci of many different kinds. The more common of these cocci are easily distinguished from the meningococcus by their fermentative and cultural characters. When these have been excluded, however, there remain a number of "pseudo-meningococci," possibly responsible for various catarrhs and colds, which can only be distinguished from the meningococcus by serological means. Under these circumstances the surest method we have at present of identifying the virulent meningococcus in the naso-pharynx of carriers—that is to say, the organism of immediate epidemiological importance—appears to be to prepare a series of specific agglutinating sera covering the various types of meningococcus isolated from the cerebro-spinal fluid of the cases in a local outbreak, and to refuse to identify any suspect coccus as the meningococcus until its serological behaviour corresponds with one or other of the types found in the cerebro-spinal fluid. This is the procedure indicated by a Special Advisory Committee to the Medical Research Committee, appointed to consider the problems of cerebro-spinal fever,[2] and it has been attended with conspicuous success. Of the two remaining reports, Dr. Bruce Low's deals with the prevalence of cerebro-spinal fever in the world, and is replete with lucid information supplying the epidemiological data that were needed for the correct appreciation of the recent outbreak. Dr. R. J. Reece's report on the outbreak itself must be regarded as preliminary in nature, as it deals chiefly with the civilian population, and does not include a full account of the incidence among troops. It includes the outbreak at Salisbury, which is of special interest because of the practical trial there by Dr. W. J. Penfold of a prophylactic vaccine prepared from the local strain of meningococcus. Some 3500 persons were vaccinated and the results were distinctly encouraging. The volume should be widely read and studied, along with the Medical Research Committee's report, by all interested in the new and fascinating public health problems presented by cerebro-spinal fever.

[1] Wyman and Sons, Limited, 29, Breams-buildings, E.C. Price 2s.

[2] THE LANCET, Feb. 26th, p. 471.

GUIDO BACCELLI: THE TRIBUTE OF ITALIAN MEDICINE TO HIS LIFE AND WORK.

LAST week, writes our Rome correspondent under date May 10th, the Capitol drew together in the Hall of the Curiatii and Horatii the most representative muster of Italian medicine ever witnessed since the country's unity and independence were proclaimed more than half a century ago—the occasion being that of commemorating the lately deceased Guido Baccelli, whose services to the national cause were only less than his contributions to the science and art of medicine as research worker, clinical teacher, and consultant. Her Majesty the Queen-Mother Margherita had already considered and approved the programme of the Commemoration, which included, as a gift to the Capitoline Museum, all the decorations, Italian and foreign, conferred on the illustrious physician, teacher, and statesman during his long career. The Syndic (Lord Mayor) of Rome, Don Prospero Colonna, supported by the Cabinet Ministers, the Senatus, and the medical consultants who formed the "commission" of the celebration, opened the proceedings with a recapitulation of the chief *momenta* in Baccelli's life and work, dwelling on his devotion to the rehabilitation of the Eternal City as culminating in the famous "Archæological Promenade," which enables the pilgrim to recall in a forenoon the historical crises of which the Palatine, the Caelian, and the Aventine were respectively the scene. Then followed His Excellency Signor Grippo, the Minister of Public Instruction, in an eloquent survey of Baccelli's salutary reforms when holding that portfolio, after which came the tribute of Italy's French sister, conveyed by Professor Joseph Teissier, who fills the chair of Clinical Medicine in the University of Lyons, and who spoke in the name of the French Education Minister and of the collective clinical schools of France. Professor Teissier's discourse was the oratorical feature of the occasion, illustrating the apophthegm of the French critic that "the judgment of foreigners is that of a contemporaneous posterity," and summing up the "title-deeds to fame" by which Baccelli will be remembered far beyond his native Italy, not only in the domain of medicine in theory and in practice, but in that of public instruction and of social rehabilitation, culminating in that "sense of citizenship" which is already the most reassuring coefficient of the "Italy that is to be." Before resuming his seat, which he did amid salvoes of applause, Professor Teissier laid on the bust of the hero of the day a crown of laurel and oak-leaves, interwoven with a ribbon displaying the French tricolour, on which was written: "To Guido Baccelli, the French Minister of Public Instruction." The Rector Magnificus of the University, Professor Tonelli, came next with an estimate of Baccelli's achievement in academic reform; and then followed the tribute of Professor Maragliano, of the Genoese School, succeeded (after a loudly applauded interlude of His Excellency Signor Barzilai on Baccelli in his political capacity as "first citizen of Rome") by a series of "reminiscences" from former students of the Roman clinique, of the more memorable among Baccelli's contributions to scientific and therapeutic medicine. These "old pupils," nearly all of them professors or *docenti* of the medical schools "from the Alps to Etna," contributed to the celebration what was perhaps its most striking feature—a succession of tableaux of the great clinician in his daily walk, from bedside to bedside, in the wards of the Santo Spirito, verifying or modifying the methods of cure announced from the professorial chair. The methods in question, many of them as original as they were effective, will form a volume to be distributed among practitioners in town and country. And with this impressive "march-past" of original work in diagnosis and therapeutics the assembly broke up, not the least edified being the lay auditors, among whom were the heads of the *corps diplomatique*, the British Ambassador, Sir Rennel Rodd, his French, Russian, North American, Spanish, Portuguese, Belgian, Scandinavian, Japanese, and South American colleagues—all except those from the courts of Berlin and Vienna.

DISCHARGE FROM THE ARMY OWING TO TUBERCULOSIS.

A MEDICAL correspondent has called our attention to the hardship involved in the discharging of soldiers from the army who have developed tuberculosis or heart trouble as a result of the hardships of trench warfare, but with regard to whom it cannot be said positively that the disease was the result of their military service, although it may have been aggravated by it. As a consequence, he points out, a man who might have lived to old age in comfortable and safe employment, but who gave it up in order to fight for his country, may be, and frequently is, discharged from the army as unfit for further service to seek employment, with or without success, as an invalid, his incapacity not being regarded as so directly due to his service as to entitle him to a pension. Our correspondent is not alone in his interest in this matter. If a man has a leg or an arm blown off in battle it is clear that no doubt or question can arise as to the fact that military service alone is the cause of his injury, but if a man contracts a particular disease in circumstances in which the majority of his comrades escape it, it is not an unfair inference that some predisposing and undiscovered weakness existed before he enlisted. Nevertheless, the hardship is obvious when we reflect that but for his having served in the field the man might have continued to enjoy his accustomed health, and that this was good enough to enable him to earn his living without consciousness of any physical inferiority as compared with his fellows. It is to be hoped that when the pressure and stress of the present war are over cases of this kind may be reconsidered and injustice redressed, if any be found. It must not be forgotten that these men were allowed to serve as being fit to do so after undergoing medical examination, and that we are on the eve of compulsory service for a large class of those who have not volunteered, while considerable pressure has been put upon many who have enlisted recently. To compel a man to serve in the army as being one physically qualified to do so, and then to discharge him from it with broken health and without compensation would not be fair treatment; and the disabled soldier has the best possible claim to be treated not merely with fairness, but with generosity.

NITROGEN RETENTION IN THE BLOOD.

WHILE the value of estimations of the urea content of the urine as a test of renal efficiency, especially when carried out by the hypobromite method, is now regarded as relatively small, there can be no doubt that a knowledge of the quantity of nitrogenous waste bodies present in the blood is capable of affording valuable indications as to prognosis and treatment. Some interesting observations on

this subject are contained in a recent paper contributed to the *Edinburgh Medical Journal* for April by Dr. Francis D. Boyd, who used the methods of Folin and Dennis for estimating the non-proteid nitrogen of the blood. From these it appears that the percentage of such materials may rise as high in other diseases as in ordinary cases of Bright's disease, and also that the blood pressure in cases of renal disease is not directly proportional to the amount of nitrogenous waste products present in the circulation. Nevertheless, large percentages are of bad import, anything over 50 mg. of non-proteid nitrogen in 100 gm. of blood indicating that the patient is in a dangerous condition. If as much as 100 mg. per cent. are discovered there is immediate danger of fatal uræmia. Treatment in such cases of nitrogenous retention must be directed to diminishing the protein intake and eliminating the waste materials by other routes besides the kidneys. For the latter purpose purgation is most useful. For the former the old-fashioned milk diet is not really suitable, as it actually contains a larger amount of protein in relation to its nutritive value than many other forms of food. If possible, it is advisable in cases of nitrogenous retention to withhold all food for 24 hours, giving only water to relieve thirst. Afterwards such things as water-arrowroot, cream, sugar, and stewed fruits (apples, prunes, figs) may be allowed, such diet being sufficient to supply energy for a patient at rest in bed. In cases of chronic nephritis examinations of the blood-nitrogen must be made from time to time as a means of regulating the diet permitted, since it is harmful to restrict nitrogenous food unnecessarily, the general nutrition then tending to suffer and the kidneys being in turn injuriously affected. The largest quantity of protein along with other foods that can be assimilated without giving rise to undue nitrogen retention is desirable.

THE DEBT OF MEDICAL SCIENCE TO THE BREWING INDUSTRY.

THE interesting address delivered by Mr. Horace Brown, F.R.S., LL.D., at a meeting of the Institute of Brewing last week, on "Reminiscences of Fifty Years' Experience of the Application of Scientific Method to Brewing Practice," reminds us again of the debt which modern surgery, like preventive medicine, owes to the fermentation industries. It is common knowledge, of course, though it may not always be kept in mind, that the study of the diseases of beer led Pasteur to opine that there was more than a mere analogy between the phenomena of fermentation and those of the contagious and infectious diseases of men and animals. The germ theory of disease was, in fact, the outcome of these researches, and to a great extent we owe modern bacteriological developments to the study of a great industrial process, the production of healthy beer. It was found, as chemical knowledge grew more thorough, that there was something beyond mere chemical changes which shaped the healthy progress of beer in the making, and it was eventually disclosed that adventitious micro-organisms were a source of mischief. Out of this discovery arose the beginning of bio-chemistry. As everyone remembers, it was the study of alcoholic fermentation, so closely and fruitfully worked at by Pasteur, which led Lister to associate the inflammation of open wounds with the action of micro-organisms introduced from without, and Mr. Brown pointed out fairly that Lister achieved the ultimate triumphs of his surgical revolution upon inspiration which came from the scientific work carried on in a distillery. The existence of micro-organisms was established and the discovery of specific pathogenic bacteria soon followed. We have often emphasised the importance of the study of enzymes in physiology and pathology. The subject has made rapid developments, and here again the researches carried out in the brewery have led the way, and further work on the fermentation processes is calculated to conduct us still nearer to insight into the nature of the metabolic life-processes.

THE DIAGNOSTIC IMPORTANCE OF THE ANKLE-JERK.

IN the *Journal of the Royal Naval Medical Service* for April is a paper by Temporary Surgeon Hildred Carlill, neurologist to the Royal Naval Hospital, Haslar, on the diagnostic importance of the ankle-jerk. While it does not contain any new facts, it serves a useful purpose in directing attention to a reflex the significance of which is perhaps not so widely recognised as it ought to be. No examination of a nervous case is complete unless the routine includes testing of the Achilles jerks. They may be regarded as normally present, and their diminution or absence is always of pathological import. The localisation of the Achilles jerk is the arc from the fifth lumbar and first sacral dorsal roots, through the corresponding cord segments, and so by the ventral roots to the muscles concerned. Lesions on either the motor or the sensory side may interfere with the integrity of the arc, and hence reduce or abolish the ankle-jerk. Surgeon Carlill has examined some 1052 sailors, who considered themselves in every way healthy; in 15 cases one or other, or both, Achilles jerks were absent. There is apparently in seven of these cases sufficient evidence to justify a provisional diagnosis of early tabes dorsalis. Among the diseases producing disturbance of the reflex may be mentioned injuries and primary affections of the calf muscles, the sciatic nerve or its branches to the gastrocnemius and soleus, the dorsal roots mentioned above, the cells of the ventral cornua of the epiconus (fifth lumbar and first sacral segments). In both systematised and diffuse lesions of the cord, provided the epiconus is in part involved, the reflexes may be in abeyance. Surgeon Carlill quotes a number of illustrative cases. In two of these he notes that with deep reflexes otherwise exaggerated on one side, from hemiplegia, the ipsilateral ankle-jerk was absent, but he does not offer any explanation of this interesting observation.

PYELOCYSTITIS AND METASTATIC ABSCESSES FOLLOWING TONSILLITIS.

IN an annotation on Appendicitis as a Sequel of Tonsillitis in THE LANCET of March 11th (p. 579), we referred to the importance of the tonsil as a portal of entry of many infections and a source of disease in distant organs. In the *New York Medical Journal* of April 15th Dr. H. B. Mills and Dr. G. A. Sowell have reported a case of tonsillitis followed by pyelocystitis, a sequel which does not appear to have been previously recorded. A boy aged 2 years was taken ill on Dec. 9th with tonsillitis. On the 12th the tonsillitis was practically cured, but the bowels were loose. On the 16th the temperature suddenly rose from normal to 103°, at which it remained for

several days, then fell to normal for a similar period, and again suddenly rose as high as before. After several periods of high temperature, with intervals of normal temperature, the child was admitted into the Samaritan Hospital, New York, on the 27th. Careful examination was negative except for swelling of the left instep, metatarso-phalangeal joint of the right big toe, and back of the left hand. All these swellings developed into abscesses which were opened and drained. The urine contained many pus cells and a few red corpuscles. The pus from the abscesses yielded the staphylococcus albus in pure culture. With the opening of the abscesses the temperature dropped from 101·8° to 99·4° for two days and then suddenly rose to 104·4°, at which it remained for three days and then dropped to 99·5°. Repeated examinations of the urine always showed large amounts of pus and the staphylococcus albus in pure culture. Blood cultures were made on two occasions and also showed the staphylococcus albus. Under 15 grains of hexamine daily the urine became almost free from pus. On account of the diseased condition of the tonsils they were removed, and from the caseous material which they contained an almost pure culture of the staphylococcus albus was obtained, there being but slight streptococcic contamination. Thus the bacteriological confirmed the clinical evidence that the tonsils were the source of the infections in other parts. Dr. Mills and Dr. Sowell have not been able to find any record of tonsillitis leading to pyelocystitis, but their attention has been called to another case in which this sequence seemed to have taken place.

THE Ingleby Lecture at the University of Birmingham will be delivered on Wednesday next, May 24th, at 4.30 P.M., in the lecture theatre of the Medical School by Dr. T. Sydney Short, physician to the Birmingham General Hospital, who has taken as his subject, Gastric Ulcer and its Complications.

THE BELGIAN DOCTORS' AND PHARMACISTS' RELIEF FUND.

SUBSCRIPTIONS.

THE subscriptions to the Belgian Doctors' and Pharmacists' Relief Fund received since the last list was published are as follows:—

	£	s.	d.
Dr. E. D. H. Carpenter (twelfth donation, total £12)	1	0	0
Royal College of Physicians of Ireland—			
Mr. R. B. Balfour, D.L.	2	2	0
Interest granted by Ulster Bank	0	14	1
Mr. J. H. Toplis	5	5	0
Messrs. J. Hayllar and Son	1	13	1
Mr. A. Chapman	0	6	2
Brighton and Hove Association of Pharmacy—			
Mr. F. J. Flatman ...	0	10	6
Mr. Edgar Jones... ...	0	10	6
Mr. J. K. Padwick ...	0	10	6
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Mr. C. Blamey	0	2	6
Mr. J. W. Bygott	0	5	0
Mr. M. E. Morris	0	5	0

Subscriptions to the Fund should be sent to the treasurer of the Fund, Dr. H. A. Des Vœux, at 14, Buckingham-gate, London, S.W., and should be made payable to the Belgian Doctors' and Pharmacists' Relief Fund, crossed Lloyds Bank, Limited.

The stock of clothes for the Belgian Doctors' and Pharmacists' Relief Fund has nearly been exhausted, and the Directress of the Committee of Clothing earnestly begs for further parcels of garments of all kinds. More especially the following articles are desired: Ladies' and children's summer dresses, stockings, and socks; suits for men; vests; sports coats for boys and girls; thin overcoats or raincoats. Parcels should be addressed Mrs. de Bless, St. Andrew's Parish Room, Palace-street, Westminster.

OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM.

THE Annual Congress of this Society was held on May 4th, 5th, and 6th at the headquarters of the Royal Society of Medicine, under the presidency of Mr. WALTER H. JESSOP, who in his opening address dealt with

Some Ophthalmic Lessons of the War.

The PRESIDENT said: First I would refer to the magnificent work done at the Front and in the hospitals here by the members of our society. To Colonel W. T. Lister and other ophthalmic surgeons at the Front has been primarily due one of the greatest surgical achievements of the war—namely, the prevention of sympathetic ophthalmitis. I have corresponded with nearly all our colleagues at the military hospitals and as yet have not heard of a single case of sympathetic ophthalmitis. This result must be due to careful treatment of all cases of injured eyeballs and early and complete removal. Looking at the history of the war and at the enormous number of wounds involving the eye by shell one would have expected the results quite otherwise. In the American Civil War 41 cases of sympathetic ophthalmitis occurred in 254 cases of destruction of the eyeball—that is, 16·14 per cent. The German official returns for the Franco-German War gave the very high percentage 55·6 in all cases of injury to the eyeball. The number of sympathetic ophthalmitis cases were 97, and 52 of these occurred within one year of the injury; the seriously damaged eyeballs gave the highest percentage of sympathetic trouble.

Papillœdema.—A subject this war has helped to clear up is papillœdema. In fracture of the vault a large percentage of cases showed signs of papillœdema, and the opportunities given of following the course of the papillœdema strengthen the view that the old chapters on optic neuritis, choked disc, neuro-retinitis will have to be quite rewritten.

The ophthalmoscopic changes were usually slight swelling of the papilla, sometimes amounting to 1 or 2 D.; the edges of the discs were blurred and indistinct, often there was a narrow yellowish white ring round the optic disc, and the changes were, as a rule, within the equator and near the papilla—in fact, the changes were an œdema of the retina. In some cases there were soft woolly-looking plaques, and in a few cases there was extreme swelling of the optic discs with hæmorrhages, plaques, &c. These conditions were associated with increased intracranial pressure, and on relief of the intracranial pressure the œdema disappeared in a short time, and in ordinary cases no after-changes are to be seen by the ophthalmoscope. This coincides with the findings of Paton and Holmes, who in cases of cerebral tumours have demonstrated that the swelling of the papillæ is an œdema and not an inflammation primarily, and that such cases usually called optic neuritis ought to be named papillœdema.

Trench nephritis.—I have had the opportunity of examining the eyes of about 150 cases of trench nephritis. Many of the first of the cases have been mentioned in the very interesting paper by Mr. R. Foster Moore.[1] These cases of trench nephritis, according to Captain W. Langdon Brown,[2] are examples of acute nephritis, and are epidemic, infective, and due to some specific infection resembling, but not actually, the organism of scarlet fever.

Since the middle of January of this year I have examined carefully, and as a rule several times, the eyes of 45 consecutive cases in the 1st London General Hospital of trench nephritis. On these I wish first to speak, as they have been specially examined by the ophthalmoscope for slight changes. In 21 of the cases (46·6 per cent.) there were signs of œdema of the retina; in many these signs in a few days cleared up, so that the percentage of cases of œdema is probably much higher. In three cases with œdema of the retina there were other changes—one had a single, superficial, flame-shaped hæmorrhage, one commencing retinitis with plaques, and one the signs ordinarily described as albuminuric retinitis. Of this last case, a man 27 years old, the great interest is that all the ordinary changes up to resolution took place in 12 weeks from the onset of general symptoms. The œdema of the retina commencing three weeks after the symptoms of dyspnœa, œdema of legs, &c., was succeeded by white,

[1] THE LANCET, Dec. 18th, 1915, p. 1348.
[2] THE LANCET, Feb. 19th, 1916, p. 391.

soft-looking plaques, hæmorrhages, macular stars. In eight weeks the only changes to be seen were small, hard-looking, white spots at the maculæ, and in 12 weeks the left-eye changes had quite disappeared, and there were in the right eye six small, very bright white spots near the macula. This case was undoubtedly one of acute nephritis, and all the signs of soft, woolly-looking, white plaques, hard-looking spots were present. One was able, as Charcot said, to use the ophthalmoscope to investigate living pathological anatomy, practically as a microscope on the living tissues. In none of these 45 cases were there any signs of pathological changes in the retinal vessels; this fact is true in nearly every other case I have observed. Curiously, in only 3 cases was there a previous history of scarlet fever, and in these 3 cases the ophthalmoscopic appearances were normal. The constant signs in every case were albumin in the urine and œdema in the extremities or face. The blood pressure varied very greatly in different cases. The detachments of the retina mentioned by Mr. Foster Moore due to œdema and sometimes a solid or nearly solid œdema all cleared up. During the clearing-up stage there were white plaques, hard white spots, hæmorrhages, &c. All these symptoms help to confirm the diagnosis of trench nephritis being toxæmic.

Starting, therefore, with trench nephritis being a toxæmia I notice that Mr. Fisher lately has read an excellent paper on gravidic retinitis being a toxæmia. Some years ago I had written a paper for our society on tuberculous retinitis which I never published and here are the drawings illustrating it. The main points are effusions limited or diffuse in and beneath the retina followed during the process of resolution by a retinitis with white plaques which cleared up completely. This clearing up, according to Rochon-Duvigneaud and Mawas, is due to the action of phagocytes, and one can almost by the ophthalmoscope see the process—the periphery of the plaques becoming ragged-looking. Since then I have had other cases where no signs of tubercle could be found and which must have been due to a septic infection. In our Transactions, vol. xxv., p. 102, is the drawing of an analogous case recorded by Mr. R. E. Bickerton; I am showing another case at this present meeting. These cases of toxæmic retinitis in trench nephritis, gravidic retinitis, and tubercle, are characterised by an œdema, sometimes amounting to a definite detachment, diffuse or limited, of the retina, the presence of white, soft, woolly plaques, hard white spots or dots, hæmorrhages, but not primary affection of the blood-vessels. We find the same conditions in the so-called diabetic and albuminuric retinitis. Are not all these generic terms misleading, or rather unscientific? It has long been known that exactly the same signs as, some writers say, are pathognomonic of albuminuric retinitis are found without any signs of kidney mischief and without any albumin in the urine. Is there, therefore, a typical albuminuric retinitis? Are there any definite ophthalmoscopic signs which would make an absolute definite diagnosis by themselves alone? This can be answered much easier in the negative, and I would suggest that there is an œdema of the retina in all these cases, and this œdema may be rendered toxic and thus produce a toxæmic retinitis or toxæmic retinœdema. As to the definite toxin, this may vary in different diseases, but the effect is practically the same. The pathological state of the arteries is not a primary condition in these cases. In toxæmic retinitis or retinœdema the initial signs of the œdema are often missed and only the later gross changes seen, as happens also in papillœdema.

One last word. I would counsel the younger oculists to work at the living pathological anatomical changes by the ophthalmoscope with different methods of illumination and not only by the electric light. Ophthalmoscopy by the ordinary daylight will reveal sometimes much more delicate pathological changes, especially as to the transparency of the retina, than can ever be accomplished by artificial light.

Papers Read.

Mr. J. HERBERT FISHER read a paper on Leber's Disease (hereditary optic atrophy). He suggested that the causal agent might be a disturbance of the pituitary body, of temporary duration and moderate in degree, implicating the visual pathway. If this view proved correct, organotherapy might do good. He exhibited a skiagram showing a honeycomb-like shadow in the situation of the pituitary.—The paper was discussed by Sir GEORGE BERRY, Mr. G. MACKAY, Dr. S. A. KINNIER WILSON, Mr. E. H. E. STACK, Mr. STEPHEN MAYOU, and Dr. C. O. HAWTHORNE.

Mr. FOSTER MOORE contributed a paper on the Retinal Circulation in Arterio-sclerosis. He agreed with Priestley Smith that a high pressure in accessible arteries in elderly men did not necessarily mean high pressure in the ciliary capillaries. A sudden obstruction of circulation due to thrombosis in an artery might lead to relative starvation of tissues, and the patient might awake to find himself blind. Sometimes there was an equally rapid recovery of vision. It was not necessary to invoke spasm of the retinal artery as a cause.—In the ensuing discussion the PRESIDENT, Mr. T. H. BICKERTON (Liverpool), Mr. C. S. BLAIR, Lieutenant-Colonel R. H. ELLIOT, Dr. HAWTHORNE, and Mr. ELMORE BREWERTON took part, and Mr. FOSTER MOORE replied.

Dr. KINNIER WILSON read a paper on Dysmetropsia, meaning thereby a defect in the capacity to appreciate the size and distance of objects. The cases of this peculiar condition he divided into (*a*) those in which the lesion was presumably peripheral, (*b*) those in which it was probably central, (*c*) psychical cases. In a case of the latter a young woman, the subject of hysteria, always saw the right half of objects much larger than the left, and of two shillings side by side she considered that on the right side to be a half-crown. In a case of occipito-parietal tumour objects looked at seemed to be practically touching the observer's face. Dr. Wilson considered that in judging of distances and sizes of objects we learn more from the retina than from so-called kinæsthetic impressions.—The paper was spoken to by Sir GEORGE BERRY, Dr. J. CRAIG, Mr. CYRIL H. WALKER, Mr. MACKAY, and Mr. J. GRAY CLEGG; and Dr. WILSON replied.

Mr. M. L. HINE recorded some observations with the Schiötz tonometer, as a result of which he was of opinion that eserine produced no injury, although many of the cases observed were in children, and that it definitely reduced intraocular tension, a view shared by a number of workers.

Mr. E. TREACHER COLLINS read a paper on Contusion Hypotony. He pointed out that diminution of tension after contusion of the eye, apart from any perforation of the globe, was not infrequent. In most cases normal tension was restored in a few days, in others not for several weeks, and in some it remained so long as to be likely to be permanent. The causes he discussed under the following heads: 1. Diminished secretion; divisible into (*a*) from nerve inhibition, (*b*) from vascular disturbance, (*c*) from epithelial damage. 2. Increased excretion: (*a*) through normal channels, (*b*) through newly-formed channels. After quoting several illustrative cases he submitted his conclusions.—Lieutenant-Colonel R. H. ELLIOT and Mr. A. B. CRIDLAND discussed this and the foregoing paper, and the authors replied.

Foreign Bodies in the Eye and Orbit.

A discussion on this subject was introduced by Mr. A. L. Whitehead (Leeds) and Mr. J. Herbert Parsons (London).

Mr. WHITEHEAD enumerated the various forms of eye injury, and said that the prognosis and treatment of an eye containing a foreign body depended upon a variety of factors. He discussed X ray localisation and the extraction of steel and iron by the electromagnet. If steel were in the vitreous he made a conjunctival flap, punctured the sclerotic behind the ciliary region, and inserted the point of the giant magnet, keeping the current on during withdrawal. In his hospital the onset of sympathetic iridocyclitis secondary to retention of a foreign body in the exciting eye was not common. An injured eye without useful vision should be enucleated if there was even a suspicion of the presence in it of a foreign body. If a foreign substance were not giving pain or discomfort it should be left alone.

Mr. PARSONS discussed the anatomical relations of the eyeball to the orbit, and urged a more accurate study of the relations of the living eye to the bones, which could be done by the insertion of slips of lead-foil in the cocainised conjunctival sac. The eye was least protected against missiles coming from a direction downwards and outwards. Despite the heat generated in a high velocity missile, the particles entering the eye were not always sterile. The diagnosis, pathological condition, treatment and prognosis all depended profoundly on the nature of the foreign body. When the body could not be seen in the eye, skiagraphy must be employed, but this had its severe limitations. He regarded accurate localisation as most important. If this were not within 1 mm. it might mean the needless sacrifice of an eye. Only rarely did a copper particle become encapsulated with restoration of useful vision. He discussed at some length

the production of siderosis bulbi. Glass and porcelain might cause remarkably little reaction in the eye, but eventually the eye usually became disorganised following iridocyclitis. The lens substance and the vitreous formed excellent culture media. The ultimate results of extraction of intraocular foreign bodies by the electromagnet were of profound importance, and had not yet received their due attention. He concluded by alluding to the different operative measures, according to the class of case, and the prognosis in them.

The debate was carried on by the PRESIDENT, Mr. A. HILL GRIFFITH, Dr. J. CRAIG, Mr. TREACHER COLLINS, Mr. GRAY CLEGG, Dr. N. S. FINZI, Captain A. W. ORMOND, R.A.M.C.(T.), Mr. ARNOLD LAWSON, Mr. S. MAYOU, Mr. R. J. HAMILTON, Mr. CRIDLAND, Mr. J. HERN, Mr. J. ROWAN, and Mr. G. MACKAY. Mr. WHITEHEAD and Mr. PARSONS replied.

Treatment of the Syphilitic Eye Affections by the Newer Methods.

A debate on the above was introduced by Mr. J. B. Lawford and Captain S. H. Browning.

Mr. LAWFORD assumed that the "newer methods" dated from the introduction of organic arsenic compounds in the treatment of syphilis. He referred to the abandonment of atoxyl and kindred preparations of arsenic owing to the frequency of optic nerve atrophy. Since the introduction of salvarsan in 1910 this and neosalvarsan had been employed very extensively in ocular syphilis. There was general agreement as to the value of salvarsan therapy in ocular lesions in the early periods of syphilis, primary, secondary, and early tertiary stages (i.e., chancre of eyelids, iritis, cyclitis, &c.), but as to the results in some of the later ocular manifestations much difference of opinion existed. He drew attention to the use of salvarsan in oculo-motor paralysis, ophthalmoplegia interna, and optic nerve atrophy of late syphilis, and in keratitis of the congenital form, and quoted cases. In reference to the reputed noxious effects of salvarsan and neosalvarsan upon the optic and other ocular nerves, he pointed out that, in the opinion of most observers, these complications were in reality fresh manifestations of the syphilitic virus. He submitted that prolonged medication by the classical antisyphilitic remedies was essential, even when the results of salvarsan treatment had been most brilliant.

Captain BROWNING said that in syphilis all aids to diagnosis should be employed. It was not true that all cases of choroiditis were syphilitic in origin. In every case of suspected eye syphilis a systematic examination of the whole body should be carried out, and repeated examination of the lesions made with the dark-ground condenser. Properly carried out, the Wassermann was one of the most reliable serological tests, the original method being the most reliable for general use. But a negative Wassermann did not mean that the patient had not got syphilis. Laboratory tests should be considered in conjunction with all other known facts. Repeated doses of arsenical preparations, combined with mercurial treatment, were needed. He spoke of the appropriate doses of various drugs and methods of administration. Kharsivan he found more toxic than salvarsan, and neokharsivan even more so. Every case must be treated on its own merits. His trials of intramine and ferrivine did not encourage him to continue their use.

The ensuing debate became general, Mr. ERNEST LANE expressing agreement with all Captain Browning's opinions.

Committee on Detachment of Retina.—Clinical Meeting.

The committee appointed to investigate cases of detachment of the retina presented their report, through Mr. Leslie Paton. It detailed the findings in 85 cases, half of which were British. Much satisfaction was expressed with the labours of the committee, who were, on the proposition of Sir George Berry, cordially thanked.

Friday afternoon was devoted to the examination and discussion of an extensive series of cases of peculiar interest at the Central London Ophthalmic Hospital, Judd-street.

On Saturday the society resumed the hearing and discussing of short papers. Major J. F. CUNNINGHAM, R.A.M.C.(T.), and Professor DE LAPERSONNE contributed papers on War Injuries of the Eye; details of many cases were given, and treatment discussed. Colonel W. T. LISTER, R.A.M.C.(T.), suggested a new operation for cases of prolapse of uvea. If an eye with a foreign body in it did not quiet down in the hospital at the Front the practice was to remove the eye. If it did quiet down the eye was left to be watched and treated as required in England.—The following papers were read: Dr. HAWTHORNE: Retinal Changes in Glycosuria. Captain A. W. ORMOND: Treatment of Large Traumatic Hæmorrhage in the Vitreous. Mr. GRAY CLEGG: Spontaneous Intraocular Hæmorrhages. Captain R. BEATSON HIRD, R.A.M.C.(T.): Notes on a Case of Tumour of the Retina. (This was referred to a Pathological Committee.)

CANADA.

(FROM OUR OWN CORRESPONDENT.)

Dearth of Medical Men in Canada.

CANADA is beginning to feel the depletion of the ranks of the medical profession. In certain sparsely settled districts of the Middle West, in the province of Saskatchewan, for example, it has been found necessary by the Provincial Government to introduce into the legislature an amendment to the Rural Municipalities Act empowering municipalities to vote a sum not exceeding $1500 towards the maintenance of a medical man in the municipality. It is proposed under the same Act to authorise municipalities to make grants towards the provision of nurses and the erection and maintenance of hospitals, one hospital serving several municipalities. The urgent need is in maternity cases.

Summer Courses for Early Graduation.

All the medical departments of the Canadian universities this year are conducting summer courses to enable their senior students to graduate some months in advance of the regular time and be released for medical service abroad. The matter was brought to the attention of the universities by the military authorities at Ottawa, who urged the necessity for such action on the part of the universities. The innovation is specially hard on the teachers, but it was felt that the necessity of the times demanded it. The University of Toronto and McGill University, Montreal, promptly complied with the request of the authorities, and it is understood that practically all the universities of the Dominion will follow suit.

Canadian Military Hospitals Commission.

The Military Hospitals Commission have issued their first bulletin, and others will follow from time to time. The objects of this Commission are the provision of convalescent homes and medical treatment for returned invalided soldiers, and for men who have enlisted; the education of disabled men for some vocation; and the arrangement of employment for the able and disabled men at the close of the war. Convalescent homes have already been opened in practically all the leading cities of Canada, and additional homes will be provided as occasion demands.

Treatment of Alcoholic Victims and Drug Addicts in Ontario.

Bringing into force in September, 1916, a prohibition law for the province of Ontario, the Ontario Government has exercised wise forethought in providing for the treatment of alcoholics and drug addicts in that province. By the new measure it will be possible for physicians and guardians to secure confinement of patients and wards in the hospitals for the insane in the province for the treatment of either condition. The alcoholic or drug victim may also enter these institutions voluntarily for one year if required, but before doing so he must be in a condition to understand the bargain he is making and the undertaking of the obligations required of him.

Free Vaccines in Ontario.

A short time ago the province of Ontario began the manufacture and free distribution of vaccines and sera. It has been ascertained that there were some persons in the province who were ready to make profit out of the arrangement, and the fact necessitated on the part of the legislature an amendment to the Public Health Act by which a fine of $100, or three months' imprisonment, will be inflicted upon anyone selling publicly or privately any of the free products manufactured by the Government. It is sad that the warning should have been needed by certain medical men. Under the free distribution 300,000 soldiers have been inoculated against typhoid free of charge by the province of Ontario, the Canadian Government being thereby saved some $225,000. In addition to typhoid vaccine, vaccines to the value of $7000 were supplied free of charge in the month of February, including antitoxin for diphtheria.

Toronto, May 6th.

Public Health.

REPORTS OF SCHOOL MEDICAL OFFICERS.

THE *City of Birmingham* has always taken a leading part in matters of public health administration. During the year 1915 every effort was made to improve and extend the arrangements for promoting the health and well-being of the children attending elementary schools, in spite of the abnormal conditions due to the war. School medical inspections were held at intervals of about a month, but only during the morning sessions; the clinics were open every afternoon, an extra clinic being established (making eight in all), and the city was divided into eight (instead of seven) districts. The report by Dr. S. Lewis Graham does not specify whether the results tabulated are those found on "routine inspection" of all children of certain ages, or on the examination of children specially brought forward as apparently in need of treatment; probably the figures refer to "special" inspections, as the number of defects found amounted to 31,262, and the total number of children examined was 42,757—that is, approximately 73 per cent. of the children had some ailment, though no doubt there were many instances of multiple defect. Next to carious teeth, the most frequently occurring condition that required treatment was the presence of enlarged tonsils or adenoids, of which there were 5049 cases, or 16 per cent.; after this comes defective vision (V. = 6/12 or less) 4055 cases (13 per cent.). The condition of the teeth is not stated, as regards frequency of defect, but it is mentioned that 14,542 children were treated at the dental clinics (in another column of the report the total is given as 17,301), so that at least 34 per cent. of the children examined suffered from defective teeth. Of the 1201 fresh cases of defective vision examined 82 per cent. were hypermetropic astigmatism (61 per cent.) or simple hypermetropia; of the remaining 17 per cent. there were 9 per cent. with myopic astigmatism, 4·4 per cent. with mixed astigmatism, and only 3·6 per cent. with simple myopia. If the parent is not present at the medical examination, and some defect is found that requires treatment, the Birmingham practice is to give a printed note, in a sealed envelope marked "private," to the child for transmission to the parent. It seems doubtful if this would always reach the parent, and in the case of very young children it can hardly be practicable. A better way would be for the nurse to visit the parent, with a note, and explain, by word of mouth if possible, the need for action.

Sheffield ranks as the fourth provincial city in regard to population in England and Wales. It is not yet provided with a school clinic owing to war conditions. "The rooms that were considered inadequate in 1912 have still to be used in spite of the fact that the number of attendances had risen from 31,200 in that year to 79,030 in 1915." Dr. T. Chetwood, however, considers that decentralisation, by the establishment of one or more branch clinics, would not be desirable, as it would lead to much extra clerical work and increased difficulties of administration and supervision; he believes that, with the existing facilities for travelling to the centre of the city from all parts, these disadvantages seem to outweigh the advantages of branch clinics. Possibly there might be some difference of opinion on this point; it would seem to be reasonable to bring the treatment centre as near as practicable to the children needing treatment. The easier it is for the child to get treatment, the more likely the child will get treated. The total number of children inspected in the entrant, leaver, and intermediate groups was 17,807. 80·76 per cent. had no defect of nose and throat; 65 per cent. had either perfect teeth or less than four decayed; and 68·3 per cent. of the intermediate and leaver children had perfect vision. In regard to teeth, an interesting comparative table is given of the findings of the school doctor as compared with those of the dentist. At the ages of 6 to 8 the school doctor generally finds from 39 to 42 per cent. of the children to have four or more decayed teeth and from 11 to 16 per cent. to have perfect teeth. The dentist with mirror and probe finds four or more decayed teeth in 79 to 81 per cent. and perfect teeth in only 3·4 to 4·6 per cent. at these ages. Ringworm of the head was satisfactorily treated by the X rays, the average number of exposures being 4·5 and the average duration of treatment 26 days.[1] There were also 631 cases treated by ointment or lotion, of which only 353 are noted as cured. Spectacles were provided, either free or at a reduced rate, in 1104 cases; and these children are examined at regular intervals afterwards by the surgeon (6 to 12 months). This is an important point not always sufficiently attended to. The glasses very often get broken or damaged, and then do more harm than good. Dr. P. J. Hay makes some criticisms on test-types, stating that "those which can be purchased for sight-testing are all of them unsuitable for children. In addition many, if not all, of them are inaccurate and badly constructed." He proposes new and simpler shapes, which appear to be very well suited to the purpose; he omits B and R, and X and Z, which he says "are anathema to most children (and to not a few adults)." There were 585 "contacts" of notified cases of tuberculosis examined during the year; 72 per cent. were found to be normal, 28 per cent. had suspicious signs, and were kept under observation. There is an open-air recovery school, but the accommodation is inadequate. Dr. Chetwood's report is very interesting and complete.

In the county borough of *Bootle* the number of entrants and leavers inspected was 2955. Of these children 65·3 per cent. had no defect of the nose or throat; 62·6 had either perfect teeth or less than four decayed; 54·3 had perfect vision and 27·7 not less than 6/9 with each eye; 9 per cent. had symptoms of adenoids; and 23·7 had enlarged tonsils.

In the report for the *County of Stafford* the Education Committee thought that school medical inspection would suffer less from a temporary interruption (owing to war conditions) than the recently established tuberculosis organisation, which is largely engaged in treatment; the routine work, therefore, was limited to the inspection of leavers and of cases presented by the teachers as in need of treatment: 7922 leavers were inspected (aged 12–13). Of these children 61 per cent. had normal vision, 77 per cent. had either perfect teeth or less than four decayed, and 63·3 per cent. normal throat and nose conditions.

The average heights and weights are given in the report on Sheffield schools. For boys 12 years of age the average height was 142·6 centimetres (56·1 inches), and the average weight 34·9 kilos. (76·9 lb.); for girls these figures were 145·9 cm. (57·5 inches) and 36·4 kilos. (80·2 lb.). These are considerably in excess of the London average, also of the averages of a group of town schools recently noticed in our columns.[2]

[1] The report, however (p. 27), is not clear on this point.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

IN the 96 large English and Welsh towns 8780 births and 5040 deaths were registered during the week ended Saturday, May 6th. The annual rate of mortality in these towns, which had been 17·4, 16·4, and 17·0 per 1000 in the three preceding weeks, declined to 15·2 per 1000 in the week under notice. During the first five weeks of the current quarter the mean annual death-rate in these towns averaged 16·7, against a corresponding rate of 16·8 per 1000 in London. Among the several towns the death-rate during the week ranged from 5·4 in Gloucester, 6·0 in Reading, 6·6 in Eastbourne, 6·7 in Walthamstow, and 7·8 in Dewsbury, to 21·5 in Walsall, 21·7 in Burnley, 21·8 in Sunderland, 24·1 in Middlesbrough, and 25·6 in South Shields.

The 5040 deaths from all causes were 617 fewer than in the previous week, and included 383 which were referred to the principal epidemic diseases, against 416 and 431 in the two preceding weeks. Of these 383 deaths, 139 resulted from whooping-cough, 120 from measles, 59 from infantile diarrhœal diseases, 43 from diphtheria, 17 from scarlet fever, and 5 from enteric fever, but not one from small-pox. The annual death-rate from these diseases was equal to 1·1, or 0·2 per 1000 less than that recorded in the previous week. The deaths attributed to whooping-cough, which had been 182, 146, and 175 in the three preceding weeks, fell to 139, and caused the highest annual death-rates of 1·4 in Sunderland, 1·6 in Manchester, and 2·0 in Burnley. The deaths referred to measles, which had been 120, 121, and 119 in the three preceding weeks, numbered 120; the highest death-rates from this cause were 1·2 in Salford and in Hull, 1·4 in Swansea, and 2·5 in Stoke-on-Trent. The deaths of infants (under 2 years) from diarrhœa and enteritis, which had been 57, 66, and 60 in the three preceding weeks, were 59 in the week under notice, and included 14 in London, 5 in Manchester, and 3 each in Birmingham and Leeds. The deaths attributed to diphtheria, which had been 65, 57, and 46 in the three preceding weeks, further fell to 43, of which

[2] THE LANCET, Sept. 4th, 1915, p. 549.

6 were registered in London and 3 in Liverpool. The deaths referred to scarlet fever, which had been 16, 22, and 24 in the three preceding weeks, fell to 17, and included 6 in London, 3 each in Liverpool and St. Helens, and 2 in Salford. The 5 fatal cases of enteric fever, of which 3 were recorded in London, were 3 below the average in the earlier weeks of the quarter.

The number of scarlet fever patients under treatment in the Metropolitan Asylum Hospitals and the London Fever Hospital, which had declined from 1778 to 1643 at the end of the four preceding weeks, further fell to 1594 on May 6th; 153 new cases were admitted during the week, against 163, 191, and 179 in the three preceding weeks. These hospitals also contained on May 6th 1291 cases of diphtheria, 237 of whooping-cough, 231 of measles, 38 of enteric fever, and 1 of small-pox. The 1243 deaths from all causes in London were 209 fewer than in the previous week, and corresponded to an annual death-rate of 15·0 per 1000. The deaths referred to diseases of the respiratory system, which had steadily declined from 405 to 295 in the seven preceding weeks, further fell to 247 in the week under notice.

Of the 5040 deaths from all causes in the 96 towns, 180 resulted from violence and 390 were the subject of coroners' inquests, and 1549 occurred in public institutions. The causes of 43, or 0·9 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest. All the causes of death were duly certified in Leeds, Bristol, West Ham, Bradford, Newcastle-on-Tyne, Hull, and in 73 other smaller towns. Of the 43 uncertified causes, 14 were registered in Birmingham, 6 in Manchester, 4 in London, 3 in Liverpool, and 2 each in St. Helens, Warrington, and South Shields.

HEALTH OF SCOTCH TOWNS.

In the 16 largest Scotch towns with an aggregate population estimated at 2,372,000 persons at the middle of this year, 1236 births and 700 deaths were registered during the week ended Saturday, May 6th. The annual rate of mortality in these towns, which had been 17·4 per 1000 in each of the two preceding weeks, fell to 15·4 per 1000 in the week under notice. During the first five weeks of the current quarter the mean annual death-rate in these towns averaged 17·7, against 16·7 per 1000 in the large English towns. During the week the death-rate ranged from 9·2 in Falkirk, 9·3 in Hamilton, and 10·3 in Clydebank, to 19·5 in Coatbridge, 20·4 in Kirkcaldy, and 24·9 in Ayr.

The 700 deaths from all causes were 91 fewer than the number in the previous week, and included 57 which were referred to the principal epidemic diseases, against numbers steadily declining from 96 to 65 in the five preceding weeks. Of these 57 deaths, 27 resulted from measles, 12 from infantile diarrhœal diseases, 11 from whooping-cough, 5 from scarlet fever, and 2 from diphtheria, but not one from enteric fever or from small-pox. The annual death-rate from these diseases was equal to 1·3, against 1·1 per 1000 in the large English towns. The deaths attributed to measles, which had been 42, 31, and 28 in the three preceding weeks, numbered 27, and included 17 in Glasgow, 3 in Paisley, and 2 each in Edinburgh and Dundee. The deaths of infants (under 2 years) from diarrhœa and enteritis, which had been 13, 9, and 11 in the three preceding weeks, were 12 in the week under notice; 5 deaths were registered in Glasgow, 3 in Dundee, and 2 in Aberdeen. The fatal cases of whooping-cough, which had been 4, 14, and 11 in the three preceding weeks, again numbered 11, of which 7 were recorded in Glasgow and 2 in Coatbridge. The deaths attributed to scarlet fever, which had been 8, 5, and 10 in the three preceding weeks, fell to 5, and included 2 in Glasgow. The fatal cases of diphtheria occurred in Glasgow and Edinburgh.

The deaths referred to diseases of the respiratory system, which had been 167, 168, and 159 in the three preceding weeks, fell to 103 in the week under notice, and were 15 below the number registered in the corresponding week of last year. The deaths from violence numbered 29, against 24 and 26 in the two preceding weeks.

In the 16 largest Scotch towns 1171 births and 673 deaths were registered during the week ended Saturday, May 13th. The annual rate of mortality in these towns, which had declined from 20·5 to 15·4 per 1000 in the five preceding weeks, further fell to 14·8 per 1000 in the week under notice. During the first six weeks of the current quarter the mean annual death-rate in these towns averaged 17·2, against 16·4 per 1000 in the large English towns. During the week the death-rate ranged from 5·3 in Clydebank, 9·2 in Falkirk, and 10·2 in Leith, to 19·6 in Kilmarnock, 21·8 in Ayr, and 24·2 in Kirkcaldy.

The 673 deaths from all causes were 27 fewer than the number in the previous week, and included 61 which were referred to the principal epidemic diseases, against numbers declining from 96 to 57 in the six preceding weeks. Of these 61 deaths, 32 resulted from measles, 11 from whooping-cough, 9 from scarlet fever, 5 from diphtheria, and 4 from infantile diarrhœal diseases, but not one from enteric fever or from small-pox. The annual death-rate from these diseases was equal to 1·3, against 1·1 per 1000 in the large English towns. The deaths attributed to measles, which had declined from 42 to 27 in the four preceding weeks, rose to 32, and included 28 in Glasgow and 2 in Dundee. The deaths referred to whooping-cough, which had been 14, 11, and 11 in the three preceding weeks, were again 11 last week, of which 5 occurred in Coatbridge and 4 in Glasgow. The fatal cases of scarlet fever, which had been 5, 10, and 5 in the three preceding weeks, rose to 9, and included 5 in Glasgow and 2 in Edinburgh. The 5 deaths from diphtheria were slightly below the average in the earlier weeks of the quarter, and comprised 4 in Glasgow and 1 in Perth. The deaths of infants (under 2 years), from diarrhœa and enteritis, which had been 9, 11, and 12 in the three preceding weeks, declined to 4, but showed no excess in any town.

The deaths referred to diseases of the respiratory system, which had been 168, 159, and 103 in the three preceding weeks, were again 103 in the week under notice, and were 18 below the number registered in the corresponding week of last year. The deaths from violence numbered 31, against 26 and 29 in the two preceding weeks.

HEALTH OF IRISH TOWNS.

In the registration area of Dublin 286 births and 351 deaths were registered during the week ended Saturday, May 13th. The deaths were equal to an annual rate of 44·7 per 1000 or excluding the 148 deaths resulting from the recent disturbances to 25·1, against 13·5 in London and 15·0 per 1000 in Glasgow.

Of the 351 deaths of all ages, 39 related to infants under 1 year and 73 to persons aged 65 years and upwards. The deaths from the principal epidemic diseases numbered 14, of which 6 were referred to infantile diarrhœal diseases, 3 to enteric fever, 2 each to measles and whooping-cough, and 1 to diphtheria.

No fewer than 80 causes of death were uncertified, while 2 were the subject of coroners' inquest; 132 deaths occurred in public institutions.

In the City of Belfast 211 births and 133 deaths were registered during the same week. The deaths were equal to an annual rate of 17·2 per 1000, and included 24 of infants under 1 year and 22 of persons aged 65 years and upwards.

The deaths from the principal epidemic diseases numbered 16, of which 7 were referred to measles, 4 to whooping-cough, 2 each to scarlet fever and infantile diarrhœal diseases, and 1 to enteric fever.

The causes of 3 deaths were uncertified and 3 others were the subject of coroner's inquests, while 37 occurred in public institutions.

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

Surgeons to be Staff-Surgeons: A. T. Rivers, C. J. Aveling, J. M. Hayes, P. B. Egan, F. H. Stephens, and S. Bradbury. K. H. Hole and G. F. Syms have been specially promoted for meritorious examination.

The following appointments have been notified:—L. S. Whitwam to *Fox*. Staff-Surgeon: A. D. C. Cummins to *Victory*, additional, for disposal. Surgeon: P. L. Gibson to *Hearty*. Temporary Surgeons: A. C. Ballance to *Orion*; W. MacMurray and A. G. Evans, both to Mount Stuart Hospital; P. C. Woollatt to Pembroke Dock Hospital; R. W. Brander and W. E. Boyd to *Pembroke*, additional, for disposal.

ARMY MEDICAL SERVICE.

Surgeon-General T. M. Corker, C.B., is retained on the Active List. Temporary Colonel R. R. Sleman, M.D. (Lieutenant-Colonel, R.A.M.C. (T.F.)), relinquishes his temporary commission on vacating his appointment as Assistant Director of Medical Services.

ROYAL ARMY MEDICAL CORPS.

Lieutenant-Colonel H. A. Haines is retained on Active List.

Major J. Lynn Thomas, C.B., late R.A.M.C. (T.F.), to be temporary Honorary Lieutenant-Colonel.

Majors to be temporary Lieutenant-Colonels whilst commanding R.A.M.C. Training Centres: A. H. Safford, B. A. Craig, C. R. Sylvester-Bradley, and T. H. Gibbon.

The undermentioned are granted temporary and honorary rank whilst serving with the British Red Cross Hospital, Netley:—As Major: Temporary Honorary Captain H. L. Tidy. As Lieutenants: H. J. Wallace, R. S. Topham, and L. W. Sharp.

Temporary Major F. H. Humphris (Captain, R.A.M.C. (T.F.)) relinquishes his temporary commission.

Temporary Captain R. R. Wettenhall relinquishes his commission.

Captain D. J. McLaren, from Somerset Light Infantry (T.F.), to be temporary Captain.

To be temporary Captains: R. G. Murray, E. F. Ackery, and A. N. Bruce.

To be temporary Lieutenants: H. Collier, F. A. O'Donnell, J. L. Whatley, C. G. Kemp, C. D. Hatrick, C. W. Dixon, F. H.

Simpson, A. H. Smith, F. C. Jobson, C. Cameron, E. Hudson, C. C. Austen, A. A. Hill, J. Monroe, A. D. Millington, J. V. Watson, W. L. O'Neill, A. C. Price, D. A. Chalmers, J. Gray, R. J. Scarr, R. L. Ferguson, O. R. Allison, T. M. Bride, A. E. Finney, A. E. Rayner, E. E. Hughes, J. L. Falconer, P. S. Green, R. H. Titcombe, F. F. Carr-Harris, E. A. T. Green, H. M. Jackson, T. F. Collins, L. L. McKeever, Temporary Honorary Lieutenant H. W. Bennett, J. D. Wright, H. C. Davies, J. P. Crawford, A. Ball, G. J. McGorty, E. H. Shaw, L. Walton, T. D. Miller, and K. M. Walker.

The undermentioned temporary Lieutenants relinquish their commissions:—P. W. L. Camps, J. A. R. Glennie, F. W. Woods, J. M. Logie, E. R. D. Maconochie, A. F. Horn, C. E. Dashwood, A. H. MacKenzie, G. B. Bartlett, D. Fisher, J. B. H. Davson, E. J. G. Jones, C. H. Martin, M. Remers, W. D. Knocker, C. F. Pridham, R. M. Chance, W. S. Hawthorne, R. A. G. Whiting, F. Slater, R. M. McKay, T. A. Fuller, A. J. Campbell, J. S. H. Lewis, P. E. Middleton, W. E. Burrows, F. Brickwell, A. E. Campbell, E. G. Kaye, C. H. W. McCullagh, A. Fisher, J. E. Gething, W. A. G. Russell, A. McGrath, W. C. P. Barrett, T. L. Wormald, M. J. Petty, and E. Saxton (on account of ill-health).

Canadian Army Medical Corps: To be temporary Lieutenant-Colonels: G. E. Beauchamp, P. J. Decarie, and Z. Rheaume. Captains to be temporary Majors: J. G. Browne and P. K. Menzies. To be temporary Majors: J. O. Lacroix, G. Bourgeois, H. M. DuHamel, G. Archambault, J. A. Lussier, and A. N. Rivet. B. R. Almquest to be temporary Captain. Lieutenants to be temporary Captains: R. James Manion and C. R. Walsh. To be temporary Captains: R. Tessier, J. U. Gariepy, L. de G. Joubert, L. Collin, J. A. Lorrain, E. G. Dagenais, L. Blagdon, A. Larose, J. J. Trudel, P. P. Gauthier, J. E. N. DeHaitre, F. Demers, E. Mallette, A. Dumont, G. Lefebvre, J. W. Ladouceur, H. C. Clermont, J. B. Trudelle, J. A. Tousignant, J. McCaffrey, M. Dolbec, A. Lamontague, and A. J. Lafleur.

SPECIAL RESERVE OF OFFICERS.

Lieutenant O. D. Price to be Captain.

Lieutenants on probation confirmed in their rank: K. P. Brown, H. D. Wright, and W. H. Ferguson.

Ex-Cadet Sergeant H. S. Evans, Cambridge University Contingent, O.T.C., to be Lieutenant (on probation).

TERRITORIAL FORCE.

Royal Army Medical Corps.

Yorks Mounted Brigade Field Ambulance: To be Lieutenants: W. O'Brian, W. Cook, J. H. Paul, and R. S. Weir.

South Midland Field Ambulance: Major B. M. H. Rogers is seconded for duty at the Military Hospital, Bulford.

Welsh Field Ambulance: Major J. Evans to be temporary Lieutenant-Colonel whilst in command of a Field Ambulance. Lieutenant O. C. Sullivan to be Captain.

London General Hospital: Lieutenants to be Captains: W. K. Churchouse and J. A. Willett.

Western General Hospital: To be Captains, whose services will be available on mobilisation: O. W. Morgan, C. B. Gratte, and R. J. Coulter.

London Sanitary Company: W. F. Lanchester to be Lieutenant.

West Lancs. Field Ambulance: Captain (temporary Major) J. Wood to be Major. Captain R. Starkey-Smith, from London General Hospital, to be Captain.

Northern General Hospital: The transfer of Lieutenant-Colonel W. E. Hume to the Northumbrian Casualty Clearing Station is cancelled. Lieutenant-Colonel W. E. Hume is seconded for duty overseas.

Southern General Hospital: Captain W. S. V. Stock to be Major on the permanent personnel. The announcement of the seconding of Captain H. B. Whitehouse is cancelled.

Lowland Casualty Clearing Station: Captain R. B. Carslaw, from Scottish General Hospital, to be Captain. Captain R. B. Carslaw to be temporary Major whilst in command of a Casualty Clearing Station.

Lowland Division Sanitary Section: Captain H. L. P. Hulbert, from Divisional Sanitary Officer, South Midland Division, to be Captain.

Attached to Units other than Medical Units.—Lieutenants to be Captains: G. H. Rains and J. Muir.

PROMOTION IN THE INDIAN MEDICAL SERVICE.

The Government of India have sanctioned a proposal which will tend to some extent to relieve the grievance which has been felt by officers of the Indian Medical Service in comparing their rate of promotion with that obtaining under war conditions in the Army Medical Service. Lieutenant-Colonels of the Indian Medical Service, especially selected for the increased rate of pay, who are retained in the service on account of the war after attaining the age of 55, are now to be treated as supernumerary on the list, and promotions are to be made in their place with effect from the dates on which they attain that age. In the case of officers who have been granted extension to complete 30 years' service for pension, and who are similarly retained in the service, promotion is to be made from the date following that of the expiration of the period of extension.

Correspondence.

"Audi alteram partem."

A SUGGESTED CLASSIFICATION OF PULMONARY TUBERCULOSIS.

To the Editor of THE LANCET.

SIR,—During the last few years the country has set itself seriously to deal with the tuberculosis question, with the result that at the present time throughout the whole of England a very large proportion of the people suffering from this disease are being treated at recognised dispensaries approved by the Local Government Board and under the direct supervision of the local municipal authorities. In all these dispensaries records are kept, all more or less similar, differing only in detail and amplitude, which records, as they increase year by year, constitute a supply of clinical and social experience relating to the disease, from which it should be possible to extract much valuable information. But a great deal of this information will remain out of reach until we can find a suitable method of classifying the different types of pulmonary tuberculosis. Without such a uniform system of classification there can be no correlation of the results from different dispensaries in different areas, and no comparison of the efficacy or otherwise of different schemes or different treatments.

A classification of this nature must satisfy certain requirements. 1. It should state briefly but fully the exact clinical condition of the patient. 2. It should be so arranged that one heading should represent one type of case and one only. 3. It should depend upon easily obtainable *facts*, and be free of any possibility of variation due to the personal equation or bias of the classifier. So that two independent observers, classifying the patients attending X—— tuberculosis dispensary during 1915, will make out an identical table.

Our present classifications do not satisfy all these requirements. The Turban-Gerhardt classification is almost purely anatomical, depending on the extent of disease in the lungs. The class into which a patient is put depends largely on the personal opinion of the classifier; two equally experienced observers might easily differ in classifying a patient under the Turban-Gerhardt heads. Two patients may come under Turban-Gerhardt 3, the one dying and the other in good condition, with a prospect of many years of life. As an advance upon this we have Philip's classification, in which both the extent of the disease and the amount of systemic disturbance are taken into account. The symbols L and S are used to denote the extent of disease and the systemic disturbance, and they are graded by placing numerals against them; thus, L_1S_1, L_1S_2, L_2S_1, &c. This classification is a step in the right direction, but it does not fulfil requirement No. 3. It is not based on easily obtained *facts*, and therefore for the same set of patients two classifiers may easily make out widely varying lists. Probably the most useful classification we have at present is Inman's. He divides pulmonary tuberculosis into three stages entirely by the amount of systemic disturbance—using as his guide the temperature record. The three stages are: (1) Resting febrile; (2) resting afebrile, ambulant febrile; and (3) ambulant afebrile. This classification works well, but it still does not entirely satisfy our requirements. There are frequently met with cases with large areas of disease, a quick pulse, cardiac distress, and dyspnœa, but a normal temperature, in whom the prognosis is very bad. This type of case will have to come under Stage 3 and be classed with the man with a small lesion still well some years after sanatorium treatment. The great merit of his classification is that it is simple and is based on incontrovertible standards. There is also Walters's classification, combining the Turban-Gerhardt anatomical classification with symbols indicating the amount of constitutional disturbance. The criteria taken are pulse, temperature, and weight—gain or loss—by which the cases are tabulated in seven classes. An excellent but rather complicated classification, but open to criticism on two points: firstly, that it includes the Turban-Gerhardt stages, which are not sufficiently definite; and secondly, that it can be applied practically only to patients in institutions under direct medical supervision.

Proposed classification.—The function of the working man is to work, and the function of his doctor when treating him for pulmonary tuberculosis is so to handle him that he may have as many years of working life as possible. For this reason, when I was endeavouring to find some method of tabulating the results of treatment of tubercular patients, which would not include the dubious terms "cured," "improved," &c., I determined to use their capability or incapability to work as my standard. For this purpose I tabulated all cases into four divisions:—

Those who at the beginning of treatment during a given period—
(A) Were fit to work and remained fit.
(B) ,, unfit ,, ,, became fit.
(C) ,, fit ,, ,, ,, unfit.
(D) ,, unfit ,, ,, remained unfit.

This classification of results is simple, easily recorded, and, moreover, depends on facts. By combining it with Inman's classification I suggest that we have a classification satisfying all the requirements set forth above, and, further, a simple method of recording the history of the disease in any one case. To take an example, the history of an imaginary case can be recorded thus:—

1900. In_1C. (Hospital treatment.)	1904. In_3B.
1901. In_2B. (Sanatorium ,,)	1905. In_3A.
1902. In_3A.	1906. In_2C.
1903. In_3A.	1907. In_1D.
1904. In_2C. (Hospital treatment.)	1908. In_1. (Died.)

It has the merit of dividing up the only doubtful group under Inman's classification—namely, No. 3. A case put down under the heading In_3D can only be one in which symptoms due to the large extent of his lesion cause unfitness to work. A temperature of 99° F. may be taken as the limit between febrile and afebrile. The facts on which the classification depends are easily kept in the dispensary or sanatorium records, and trustworthy results can be obtained from them by independent observers.

It may be argued that for this classification some standard of work is necessary. But in practice I have not found this so. Most working patients are doing, at the time of their illness, that work which is most suited to their physique, and the clerk finds his work just as hard and tiring and likely to produce constitutional disturbance when he is on the downgrade as does the builders' labourer.

I am, Sir, yours faithfully,

R. C. WINGFIELD, M.B., B.Ch. Oxon., M.R.C.P. Lond.,
Medical Officer in Charge of the Tuberculosis Department, St. Thomas's Hospital.

May 1st, 1916.

INFLUENCE OF FEBRILE CONDITIONS ON INOCULATION AGGLUTININS.

To the Editor of THE LANCET.

SIR,—In reference to the letter on this subject by Dr. E. W. Ainley Walker in your issue of April 29th, the question which has been raised is this: Does the passage through a severe febrile condition markedly reduce or remove the inoculation agglutinins? It is obvious that this can only be answered by comparing the amount of agglutinin in inoculated persons who have passed through such an attack with the amount in those who have not. Professor Dreyer and his colleagues published tables composed exclusively of those who had passed through such attacks without any controlling results. I compared these with normal tables published previously by Professor Dreyer and the result definitely supported the presence of such an effect. Dr. Ainley Walker denies that the tables are comparable, on the ground of varying intervals since inoculation. These important data ought to have been stated in his tables but were not. At present Professor Dreyer has published no controls which can be used and hence none of the results given are, so far, reliable evidence.

Dr. Ainley Walker is under a misapprehension in his alternative plea that the manner in which the tables were compared exposes one to criticism. Firstly, I compared the arithmetical means; secondly, I gave the results according to his own standard of the presence of 25 agglutination units, an artificial standard; and, thirdly, I stated that any other comparison gave the same result. And this is so. For the comparison of two series composed of widely divergent numerical units, the truest method is to arrange the units in numerical order and compare the value of the middle term of each series. Suppose the group of series to be compared contained respectively p, q, r, &c., terms, p, q, r being odd integers, and the terms of each series being arranged in order of value. The most correct result is obtained by comparing the terms $\frac{p+1}{2}$, $\frac{q+1}{2}$, $\frac{r+1}{2}$, &c.

If p, q, r be even, the mean is taken between $\frac{p}{2}$ and $\frac{p}{2}+1$. Applying this method to Professor Dreyer's tables gives the following results:—

Normal typhoid inoculated persons = 138 typhoid agglutination units.
Paratyphoid A occurring in typhoid inoculated persons ... ... = 32 ,, ,, ,,
Paratyphoid B ditto ... ... = 75 ,, ,, ,,
Other febrile conditions, ditto ... = 44 ,, ,, ,,

On their own contention that they have no controls, Professor Dreyer and his colleagues have thus published no evidence which can be applied to the question of whether a severe febrile condition markedly reduces the inoculation agglutinins. So far as their evidence goes, it supports the view. My own evidence does likewise. I do not contend that it is sufficient to prove it, but I have seen no evidence yet to the contrary. I may add that I ascribed no intentional discourtesy to Professor Dreyer and his colleagues at Oxford, but I am glad of their graceful disclaimer.

I am, Sir, yours faithfully,

Greywell, Bursledon, Hants, May 6th, 1916. H. L. TIDY.

THE STUDY OF APPLIED PSYCHOLOGY.

To the Editor of THE LANCET.

SIR,—Having now had an opportunity of reading the rules and prospectus of the Society for the Study of Orthopsychics, concerning which a letter from Dr. W. H. B. Stoddart appeared in your issue of May 6th, I find that it in no way meets the requirements set forth in my letter. The meetings for the discussion of papers are limited to four per annum, and the main object of the society is clearly the teaching of students. The syllabus could hardly have been better devised if it had been intended for students who have had an exhaustive training in science. I find, however, that members of the Child Study Society, Froebel Society, National Special Schools' Union, and London Teachers' Pedagogical Society are specially invited. The psychological experiment of putting such students through an elaborate course of this nature cannot fail to be profoundly instructive—to the teachers. It reminds me of the story of the clergyman who wrote to Huxley asking how he might best obtain a sound knowledge of the theory of evolution. He was recommended to take out a five years' course of study in chemistry, physics, and biology at a well-equipped college. This society will doubtless do useful work, but along different lines from those which I had in mind. Probably the time is not yet ripe for an independent Society of Applied Psychology. In that case it would be well that a nucleus should be formed under the ægis of some old-established society and safeguarded by its prestige. Perhaps the Royal Society of Medicine best fulfils these conditions, for I regard a thorough knowledge of physiology and pathology as of paramount importance.—I am, Sir, yours faithfully,

Queen Anne-street, W., May 13th, 1916. J. HERBERT PARSONS.

THE COMPOSITION OF EUSOL.

To the Editor of THE LANCET.

SIR,—Our attention has been directed to an error in calculation which has appeared in the papers on eusol published from this department.

The amount of free hypochlorous acid in the solution of eusol made up according to our recommendations was stated to be approximately 0·5 per cent.[1] This should read approximately 0·27 per cent. As we have uniformly stated the weights of the constituents to be used in making the solution this error does not in any way affect the validity of the results which have been recorded, but the point may have given rise to difficulty when solutions for intravenous injection were being tested by titration.

By following the directions given in our papers (viz., 12·5 gm. bleaching powder, 12·5 gm. boric acid to 1 litre of water) standard eusol is obtained of which in general

1 c.c. = 1 c.c. $\frac{N}{10}$ sodium arsenite solution.
= 0·00354 gm. chlorine
= 0·00262 gm. hypochlorous acid.

[1] THE LANCET, Feb. 12th, 1916, p. 360.

Slight variations from this standard occur, depending on the percentage of "available chlorine" in the bleaching powder. With the best samples the percentage of hypochlorous acid in the solution rises to 0·3, but bleaching powder of B.P. standard (30 per cent. available chlorine) gives 0·27 per cent. hypochlorous acid.

We are, Sir, yours faithfully,

Department of Pathology, University of Edinburgh, May 15th, 1916. J. LORRAIN SMITH. THEODORE RETTIE.

THE TREATMENT OF COLITIS AND PROCTITIS AND OF ULCERATION OF THE RECTUM AND COLON.

To the Editor of THE LANCET.

SIR,—I have been much interested in Mr. Aslett Baldwin's letter on the above subject in THE LANCET of May 6th. I have treated those cases for some time with ionisation with a 2 per cent. solution of zinc sulphate in the manner described by Mr. Baldwin. I use the same technique, except that I use a warm solution of bicarbonate of soda instead of the chloride of soda for damping the pad attached to the negative pole, and I bring the current slowly up to only 15 or 20 milliampères, as I find this is as much as a patient will usually tolerate. I allow the current to act for 10 to 15 minutes at each treatment, and I give two treatments a week.

I have been struck with the rapidity with which the condition responds to this form of treatment. The mucus and blood soon disappear from the stools, and one soon notes the disappearance of the colonic pain so frequently associated with the above conditions and which causes the patient so much distress. I am convinced that in ionisation we have a valuable remedy for the ailments which have proved so resistant to other forms of treatment.

I am, Sir, yours faithfully,

D. I. MENZIES-CONACHER, M.B., C.M. Edin.

Thurloe-place, S.W., May 16th, 1916.

THE SUPPLY OF MEDICAL OFFICERS TO THE SERVICES.

To the Editor of THE LANCET.

SIR,—I wish to suggest that the majority of doctors who do not join the army and navy should agree to treat, but during the war only, each panel patient for a sum not exceeding 20*s*. per annum. If a panel patient does not receive any treatment during the year no part of this 20*s*. would be paid, but if the receive treatment a yearly sum *not exceeding* 20*s*. shall be paid. A fee of 3*s*. 6*d*. to be paid for a day visit and 5*s*. for each night visit. The money required to be obtained out of the 7*s*. 6*d*. now paid to the panel doctor per annum, 5*s*. by the panel patient, and 7*s*. 6*d*. by the Treasury; doctors' fees to be paid quarterly.

What number of doctors would such an agreement provide for the army? In 1914 there were 32,772 doctors practising in the United Kingdom, not including 3356 army and navy doctors. Mr. Tennant lately stated in the Commons that there are now 10,659 doctors "holding commissions" in the army. Probably some of these are from the Dominions. But taking it that the great majority came from the United Kingdom, this leaves about 22,113. Supposing half of these were under the age of 45 this would qualify 11,056 more to join the army. These figures very much underestimate the actual conditions, as probably half of the 10,659, although "holding commissions," are engaged in medical practice at the same time or acting to local hospitals containing wounded troops. Moreover, not half of the 22,113 are over 45 years of age. We may, therefore, estimate that about 27,342 of the above total are now actually practising in the United Kingdom.

It has been said that one chief reason why more doctors do not join, is the panel system. Of a total of 29,875 doctors in England, Scotland, and Wales about 14,500 are panel doctors, thus giving 15,375 non-panel doctors of all ages. More than half of the panel doctors are well under 40 years of age. If, therefore, 7250 of these went abroad with the army and half of the non-panel doctors agreed to act on my proposal, this would still give about 14,937 to carry on the panel system.

I am, Sir, yours faithfully,

Liverpool. ROBERT R. RENTOUL, M.D.

The War.

THE CASUALTY LIST.

THE following names of medical officers appear among the casualties announced since our last issue:—

Died.

Lieutenant J. J. Mackintosh, R.A.M.C., attached to the Essex Regiment, graduated M.B., B.Ch. Glasg. in 1908, and was in South Africa prior to joining the Royal Army Medical Corps in July, 1915.

Wounded.

Captain F. B. Winfield, R.A.M.C., attached to the East Yorks Regiment.

Captain E. J. Blair, R.A.M.C., attached to the Black Watch

Captain H. F. N. Scott, R.A.M.C.

Missing.

Captain W. R. O'Farrell, R.A.M.C.

DEATHS AMONG THE SONS OF MEDICAL MEN.

The following sons of medical men must be added to our lists of those who have fallen during the war:—

Lieutenant C. J. McConaghey, Black Watch, son of the late Colonel J. McConaghey, Inspector-General of Hospitals, I.M.S.

Commander B. L. Owen, fourth son of the late Dr. A. Ll. Owen, of Southsea.

Lieut.-Col. C. A. Madge, South African Imperial Force, fourth son of the late Dr. H. M. Madge, of Upper Wimpole-street, London

The following met death during the Irish rebellion:—

Colonel H. Allatt, late Duke of Cornwall's Light Infantry, son of the late Dr. C. K. J. Allatt.

THE HONOURS LIST.

His Majesty the King has conferred the *Distinguished Service Order* upon—

Captain Robert McCowan Hill, R.A.M.C. (attached to the 2nd Argyll and Sutherland Highlanders).

For conspicuous gallantry and devotion to duty. He went to an area which was under intense bombardment, amputated the leg of a wounded officer, and attended to other wounded under most difficult and dangerous circumstances. Finally he accompanied two stretcher cases back under shell fire.

The *Military Cross* has been conferred upon—

Captain James Lennox Stewart, R.A.M.C. (attached to the 1st Gordon Highlanders).

For conspicuous gallantry and devotion to duty on several occasions when tending the wounded under heavy fire. On one occasion he rallied men and set a splendid example of coolness and bravery.

FOREIGN DECORATIONS.

The following foreign decorations have, with the approval of His Majesty the King, been conferred upon the following members of the Royal Army Medical Corps Mission to Serbia, March to June, 1915:—

Order of St. Sava.

Capt. N. Cameron, 5th Class.
Capt. J. M. Clements, 5th Class.
Capt. B. C. Ewens, 5th Class.
Capt. A. K. Forbes, 5th Class.
Capt. C. M. Forster, 5th Class.
Capt. J. M. Hill, 5th Class.
Col. W. Hunter, C.B., 2nd Class.
Capt. S. W. Lund, 4th Class.
Capt. S. E. McClatchey, 5th Class.
Capt. C. R. Nicholson, 5th Class.
Capt. T. H. Ravenhill, 5th Class.
Capt. H. Y. Riddell, 5th Class.
Capt. J. H. V. Scott, 5th Class.
Capt. P. J. A. Seccombe, 5th Class.
Capt. B. M. Smith, 5th Class.
Capt. C. E. H. Smith, 5th Class.
Capt. R. H. Spittal, 5th Class.
Lt.-Col. G. E. F. Stammers, 3rd Class.
Capt. L. A. Walker, 5th Class.
Capt. E. S. Walls, 5th Class.
Capt. G. Whittington, 5th Class.
Capt. J. S. Williamson, 5th Class.
Capt. W. M. Will, 5th Class.
F. F. Brown (late Lt., R.A.M.C.), 5th Class.
W. W. C. Topley (late Capt., R.A.M.C.), 4th Class.

THE WAR MEDICAL AND FIRST-AID EXHIBITION.

—The War Medical and First-Aid Exhibition, which was to have been held at the Royal Horticultural Hall, Vincent-square, Westminster, from Monday, May 22nd, to Friday, May 26th, has, with the consent of the Minister of Munitions, been postponed to July 25th to 28th inclusive.

OBITUARY OF THE WAR.

FRANCIS COURTENAY LAMBERT, M.R.C.S., L.R.C.P. LOND.,

MAJOR, ROYAL ARMY MEDICAL CORPS.

Major F. C. Lambert died from paratyphoid fever at Kut-el-Amara on March 29th. He was born at Dover in 1879, and was the eldest son of Lieutenant-Colonel Lambert, late of the Royal Marine Artillery, of Branksome Park, Bournemouth. He received his education at Cheltenham, and in 1896 became a student at St. Mary's Hospital, London, graduating M.R.C.S., L.R.C.P. Lond. in 1902, and later filling the post of house surgeon at St. Mary's Hospital. Major Lambert took a great interest in the Volunteers, holding at one time the position of staff sergeant in the medical branch, and gaining the Jubilee medal. He joined the Royal Army Medical Corps in 1904, and served throughout the campaign in Mesopotamia, his name being mentioned in despatches four times. He married Nora, only child of the late Colonel Druitt, of the Munster Fusiliers, and of Mrs. Druitt, of Huntly, Parkstone, Dorset.



REGINALD KINLOCH MACGREGOR, M.R.C.S., L.R.C.P. LOND.,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain R. K. MacGregor, who was accidentally killed in France on April 23rd at the age of 28, was the only son of Dr. and Mrs. R. D. MacGregor, of Clerkenwell, London. He was educated at Edinburgh and at University College School, London, and was a medical student at St. Bartholomew's Hospital, qualifying M.R.C.S. and L.R.C.P. in 1911. When the war broke out he joined the Royal Army Medical Corps and crossed over to France with the first Expeditionary Force, being promoted Captain at the end of the first year. A near relation writes: "Few men of his years have left so many warm and devoted friends. He was of a singularly gentle, kindly, and constant nature, and all who knew him feel that his untimely death has robbed them of a friend they will sorely miss."



WILLIAM RUDOLF CENTER, M.B., C.M. EDIN., M.R.C.S., L.R.C.P. LOND.,

FLEET-SURGEON, R.N.

Fleet-Surgeon William Rudolf Center, of H.M.S. *Russell*, who died in the Royal Naval Hospital, Malta, from wounds received when the ship was sunk on April 28th, was the only son of Lieutenant-Colonel William Center, I.M.S., and grandson of the late Rev. William Center, Longside, Aberdeenshire. Born in India in 1871, he received his early education in Aberdeen and Charterhouse, and then proceeded to Edinburgh University, where he graduated in medicine in 1893 with honours, and later took the M.R.C.S., L.R.C.P. Lond. He entered the Navy in 1896, and his first commission was in H.M.S. *Fox* in West Africa. He was in the *Ramillies* in 1901 and also in the *Cambrian* on the Australian station in 1905. He married Zoe Clara, daughter of the Rev. Bennett Blakeway, Harton Vicarage, Leek, Staffs, but leaves no family.

TYPHUS FEVER AT PRISONERS' CAMPS IN GERMANY.

The attention of the public in this country has recently been drawn to the occurrence of typhus fever in Germany through the narration of the events that transpired at the prisoners' camp at Wittenberg, and the exhibition of callousness to suffering and brutal inhumanity displayed by the Prussian officials towards the unhappy fever-stricken English prisoners of war. In this connexion the experience of two captured French military surgeons is of interest, their story having recently been published in the *Revue d'Hygiène*. From this it appears that typhus was epidemic during the first half of 1915 in two camps in which prisoners of war were incarcerated—namely, at Langensalza and Niederzwehren, both of which are situated in Prussia. The conditions in these camps were very bad, especially at the former, where the overcrowding was very great and the facilities for personal cleanliness quite inadequate. Before long every prisoner became infested with lice, which swarmed in the hair of the head, the pubis and the axillæ, as well as upon the clothing of the men. In December, 1914, the Germans adopted the system of intermingling the Russian with the French prisoners in the huts with a view, as they cynically said, of enabling the Allies to become better acquainted with each other. It is believed that the typhus infection was introduced by the Russians, and the spread was facilitated undoubtedly by the terrible conditions existing in the camps. Within a month after the mixing of the prisoners typhus broke out, and continued to be epidemic at Langensalza till May and at Niederzwehren till July. No attempts were made at first by the Prussian officials to arrest the progress of the epidemic, and it was not until some of the German soldiers guarding the camp had been attacked that isolation of the sick and disinfection of the vermin-infested clothing was begun. The two French medical officers, Surgeon-Major Deléarde and Auxiliary Surgeon D'Halluin, can give no precise figures as to the total number of typhus cases and deaths in the two camps, but they give some approximation to the numbers at Niederzwehren. This camp was divided into four "blocks" of hutments accommodating altogether 20,000 prisoners (roughly 12,000 Russians and 8000 Frenchmen). In the "block" to which they were attached for medical purposes there occurred 1834 typhus cases, and they estimate that during the height of the epidemic 5000 fever cases were under treatment in the four blocks. There were in all 67 captive French and Russian medical officers in this camp and 20 of them were stricken down with typhus. In one of the blocks 138 volunteers of both nationalities attended as orderlies on the sick, and 96 of this number contracted typhus. There was a considerable mortality, but definite figures cannot be given. The average strength of the French prisoners during the first half of 1915 was 7131, and among them there were 987 deaths during the period, the majority being from typhus; but others also occurred from pulmonary tuberculosis, diphtheria, pneumonia, neglected wounds, and general misery arising from the privations of all kinds to which the unfortunate prisoners were exposed. The etiology of typhus is discussed by Dr. Deléarde and Dr. D'Halluin, who agree that the usual means of contracting the disease is through the bites of infected lice; but they urge attention to another mode of spread which, though not so frequent, should not be ignored—namely, through the expectoration coughed out in the form of spray by the typhus patient. Coughing is common in the early stage of typhus, and the doctor or the nurse is liable to receive the droplets coughed out by the patient full in the face. Comparison is made between typhus fever and plague, in both of which the virus is commonly conveyed to man by the agency of a biting insect. But in typhus, as in pneumonic plague, the virus may be conveyed from the infective secretions of the respiratory passages, through coughing, to healthy persons within short range. An illustrative example is quoted. A captive French doctor was only five days at Langensalza camp, and on one occasion, the day before he was transferred to Niederzwehren, he visited some typhus cases, but only examined a single one,

who, however, coughed in his face. On arrival next day at the second camp he took all precautions, wearing special garments while at the sick beds, changing his under-linen twice daily, as well as lathering himself all over with a medicated soap once a day. He, however, developed typhus 12 days after leaving Langensalza camp.

CENTRAL MEDICAL WAR COMMITTEE.

A meeting of the Central Medical War Committee was held on Wednesday, May 17th, when further debate took place as to the position of the Committee under the new arrangements for compulsory military service. The position of the Committee has throughout been that if the War Office requires any selection of men to accept medical commissions, and if the War Office agrees that such selection can only be done by a professional body, the Committee will accept the responsibility, while making it perfectly clear that it was one which they had not sought. The united sense of the Committee, after discussion, was that all qualified doctors coming under the action of the new Military Service Act should be referred to the Committee, or some professional body, except those who are refusing to serve on conscientious grounds. Claims for exemption from service in the Royal Army Medical Corps or to have commissions in that corps would thus be considered by a professional body, with the result that individual medical men, as well as the medical men in different localities, would have the best chance of securing a just hearing of their representations, while certainly the risk of depleting particular neighbourhoods of medical practitioners would be avoided.

ENLISTMENT OF CONSUMPTIVES.

We are glad to note that the Local Government Board has taken the step of instructing medical officers of health to furnish the Army Council with particulars of tuberculosis notifications. The list is to include all male persons who on Jan. 1st of the present year were between the ages of 18 and 45, and who had been notified since Feb. 1st, 1913, as suffering from tuberculosis. It is obvious that this information is essential in order to avoid enlisting for active service men who have had a recent attack of tuberculosis and who are likely to break down sooner or later under the stress of prolonged exertion.

BENEVOLENT FUNDS FOR THE SERVICES AUXILIARY TO THE ROYAL ARMY MEDICAL CORPS.

We have already called attention to the proposal for establishing some kind of benevolent organisation for the benefit of the families of medical officers in the Special Reserve, the Territorial Force, and the new armies. A meeting, to be presided over by the Director-General, will be held in the Royal Army Medical College, Grosvenor-road, S.W., at 2.45 P.M., on Thursday, June 1st, at which it is hoped there will be a large attendance of officers now serving.

ENROLMENT OF SCHOOL MEDICAL OFFICERS.

The Secretary to the Board of Education has sent a circular to the local education authorities asking for an immediate return of all medical officers on the staff of the School Medical Service who have not attained the age of 45 years. The Board of Education considers that in the event of a temporary curtailment of the service becoming necessary provision should at any rate be made for the medical inspection of children of all ages who appear to be ailing, and for the maintenance of any treatment at present being undertaken. The Board advises that all the officers should enrol under the scheme of the Central Medical War Committee, irrespective of whether they can be spared or not. A commission will in no case be granted except with the consent of the local education authority and the approval of the Board of Education.

PHYSICAL CLINIQUE FOR WOUNDED AND DISABLED SOLDIERS.—The committee formed to organise a combined physical treatment for wounded and disabled soldiers in London has now issued an appeal. The methods—hyperthermal, whirlpool, and other local baths, massage and mechanical movement by means of special apparatus—have been already described in THE LANCET of Feb. 5th and 12th and March 25th. The conditions which are claimed to be amenable to a skilful combination of such methods include the common sequelæ of wounds and operations—viz., defective circulation and swelling, painful scars, weak and contracted muscles, and, above all, in very many cases, stiffness and immobility of joints. The reports already published show the favourable nature of the results obtained in France from purely physical methods of this kind following hospital and surgical treatment. By private generosity a complete installation of special baths and necessary apparatus has now been provided, and will shortly be set up in rooms at 126, Great Portland-street, London, W., where accommodation will be provided for the treatment of 60 patients per day at an estimated weekly expenditure of £30. The committee hope to open this clinique at the beginning of June. Treatment will be given free of charge and in the first instance to officers only. The appeal is now made for a minimum sum of £1500 to cover the first six months' expenses. Donations should be sent to the treasurer, Mr. A. Louis Allen, 1, St. James's-street, London, S.W.

EDINBURGH ADVISORY COMMITTEE FOR WOMEN'S WAR EMPLOYMENT.—The Board of Trade have appointed the following members to form an Edinburgh and Leith Advisory Committee for Women's War Employment:—President, Lord Provost Sir Robert K. Inches; Chairman, Provost Malcolm Smith (Leith); Mrs. A. Adams, Mr. Neil S. Beaton, Mr. James Campbell, Miss G. G. Cowan, Mr. James Currie, Mr. W. Fraser Dobie, Councillor W. Graham, Mrs. Jane E. Hannay, Mr. J. Milne Henderson, Hon. Mrs. Hope, Mrs. Helen L. Kerr, Miss Alice Low, and Miss Ethel Whalley.

A NEW CANADIAN HOSPITAL IN LONDON.—Princess Louise opened on May 11th a hospital of 25 beds for Canadian officers at 1, Hyde Park-place. The hospital has been generously equipped by Colonel and Mrs. A. E. Gooderham, of Toronto, and is to be maintained by the Canadian Red Cross. Captain Creighton, Canadian A.M.C., is in charge. Colonel Hodgetts stated on behalf of the Canadian Red Cross that after the war the furniture of the hospital will be handed over to the British Red Cross for the Star and Garter.

THE GAZETTE OF THE 3RD LONDON GENERAL HOSPITAL.—The Gazette in its May issue is again able to boast that the whole of the literary and artistic contents has been supplied from the hospital. The contributions, which maintain their previous standard, are by past and present patients or members of the staff. This issue has portraits of Sir Alfred Keogh, Sir James Kingston Fowler, and Sir Alfred Pearce Gould.

THE MILLER GENERAL HOSPITAL FOR SOUTH-EAST LONDON.—Through the generosity of Mrs. Almeric Paget this institution has been enabled very largely to extend its massage and electrical department. The Almeric Paget Massage Corps is doing most valuable work in military hospitals and camps, the organisation being carried out by the Hon. Essex French, the daughter of Field-Marshal Lord French.

THE WOUNDED ALLIES RELIEF COMMITTEE.—At the War Fair at the Caledonian Market, N., on June 6th and 7th, in aid of the funds of the Committee, any odd cups, saucers, vegetable dishes, table glasses, &c., will be welcomed. Many house-wives must have in their possession odd pieces of china for which they have no further use, and which they will be glad to get rid of, and others may be glad of an opportunity to purchase missing pieces.

NORFOLK WAR HOSPITAL MAGAZINE.—We have received the first two numbers of the *Norfolk War Hospital Magazine*, a monthly publication, which, while directed to the staff and patients, should interest an outside public. It is well edited, and in addition to hospital news contains amusing illustrations, some good quips, and some sober thinking. The profits from the sale of the paper are devoted to extra comforts for the patients, and the magazine can be obtained direct from the hospital or the Norwich bookshops.

Obituary.

J. WILLIAM WHITE,

EMERITUS PROFESSOR OF SURGERY AT THE UNIVERSITY OF PENNSYLVANIA.

Dr. J. William White, emeritus professor of surgery at the University of Pennsylvania, died on April 24th from malignant disease of the spine, in his sixty-sixth year. The news will come as a shock to his many English friends who saw him last year overflowing with vitality and enthusiasm in the cause of the Allies in the great war.

After graduating in medicine at the University of Pennsylvania in 1871, White, who had only just attained manhood, accompanied Professor Agassiz in a scientific expedition to South America. On his return he became associated with the Philadelphia Hospital as assistant to the late Professor Agnew, whom he eventually succeeded in the chair of surgery in 1900. A widely equipped surgeon, he wrote extensively on genito-urinary diseases; devised the well-known operation called after him; was joint author of the "American Text-book of Surgery" and of the "Text-book of Genito-Urinary Surgery"—both very successful publications. He was also a strong believer in the athletic life, was a champion swimmer and boxer, and was probably the last man in America to fight a duel. The prominent position taken of late years in athletics by the University of Pennsylvania is largely due to his exertions.

Few Americans have been more warmly welcomed in England, where he had many friends, the circle of whom had been greatly extended of late by his ardent advocacy of our cause. With characteristic energy, he strove from the very outbreak of hostilities to place the clear issue between Liberty and Absolutism before his fellow countrymen. His "Primer for Americans," in its more expanded form "A Text-book for Americans," had a large sale, and the briefer version has been translated into neutral languages and widely disseminated. White delighted in nothing more than a fight, and he gave the hyphenated Americans no quarter. He went to France with the University of Pennsylvania unit for the American Ambulance, and everyone was impressed by his extraordinary virility. He saw all and did everything that was possible to a neutral, and his firm conviction in the justice of the cause for which this country is fighting was reinforced by all that he heard and experienced.

THE LATE DR. CHARLES JOHN GIBB.—Dr. C. J. Gibb, who was consulting surgeon to the Newcastle-on-Tyne Royal Infirmary, died at his residence in Newcastle on May 13th, in his ninety-third year. He was the son of Mr. John Gibb, who practised as a surgeon in Newcastle for nearly 40 years. After studying at the College of Medicine in his native town he qualified with the M.R.C.S. and L.S.A. in 1847, graduating M.D. at Durham University in 1859. Dr. Gibb was in practice for over 60 years, and at one time was a lecturer on pathology, physiology, and anatomy in the Newcastle-on-Tyne College, where he was also examiner in pathology. During the cholera epidemic in Newcastle in 1853, when over 1500 deaths were recorded, Dr. Gibb took a prominent part, and afterwards he wrote a report on epidemic cholera as it appeared in the Royal Infirmary.

Medical News.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—An ordinary meeting of the Council was held on May 11th, Sir W. Watson Cheyne, the President, being in the chair.—Fleet-Surgeon Percy William Bassett-Smith, C.B., and Mr. James Frank Colyer were introduced, and, after signing the by-laws and making the required declaration, were admitted Fellows of the College.—It was resolved, in accordance with a report from the Court of Examiners, to issue Diplomas of Membership to 99 successful candidates.—On a report from the Cartwright Prize Committee the following was chosen as the subject for the five years ending Dec. 31st, 1920: "The Treatment of Injuries of the Jaws and the Restoration by Mechanical Means of Parts of the Jaws Lost as the Result of Injury or Removed on Account of Disease." It may be mentioned that the Cartwright prize consists of a bronze medal and £85, and that it is awarded every five years.

At the Primary Fellowship Examination in Anatomy and Physiology of the Royal College of Surgeons of England, held on May 3rd, 4th, and 9th, 34 candidates presented themselves of whom 11 were approved and 23 were rejected. The following are the names and medical schools of the successful candidates:—

Francis Cooke Alton, St. Thomas's Hospital; Gerald Victor Wright Anderson, Bristol University and University College Hospital; John Myles Bickerton, Cambridge University; Horace Braithwaite Bullen, Cambridge University and St. Bartholomew's Hospital; Dorothy Gilford, London School of Medicine for Women; Ronald Benjamin Green, University College; Arthur James McNair, Cambridge University and Guy's Hospital; Ludlow Marcott Moody, King's College; Rowland John Perkins, St. Bartholomew's Hospital; Henry Brett Russell, St. Thomas's Hospital; and Jose Victory, Costa Rica and Guy's Hospital.

The Licence in Dental Surgery was conferred on May 11th upon—

Christopher Hodgson Pywell, Middlesex and National Dental Hospitals.

THE NATIONAL MEDICAL UNION.—At a special general meeting of the National Medical Union, held at 346, Strand, on May 16th, Mr. V. T. Greenyer presiding, a resolution was passed condemning unanimously the action of the Local Government Board in attempting to effect any reduction in the fees paid to the medical profession for the notification of infectious diseases. At the same meeting the Union passed a resolution hoping that the Government would reduce the duty on motor-car licenses payable by the medical profession to the scale of 1915; while a third resolution urged the Government to supply the medical profession with petrol at as low a cost as possible, noting with regret that the arrangements for the supply had been placed in the hands of the National Health Insurance Commission.

SUMMER TIME ACT, 1916.—In accordance with the provisions of the Summer Time Act, 1916, popularly known as the Daylight Savings Bill, the time on all railways, at all post offices and other Government establishments will, in the night of Saturday-Sunday, May 20th-21st, at 2 A.M., be put forward one hour to 3 A.M. The public is requested to follow suit by putting forward all clocks and watches by one hour during the night in question. Normal time is to be restored on the night of Sept. 30th. For astronomical, meteorological, and nautical purposes the time remains unaltered.

ASYLUM WORKERS' ASSOCIATION.—The annual general meeting of this association was held on May 17th at the rooms of the Medical Society, Chandos-street, W., under the presidency of Sir John Jardine. It was stated in the annual report that up to May, 1915, considerably more than 2000 attendants in asylums in England and Wales had joined the colours, not including numerous clerks and artisans. Since that time practically all the remaining workers of military age had presented themselves under Lord Derby's scheme. The membership of the association at the time the report was issued numbered 2626, including 316 life members, 213 associates, and 2097 ordinary members.

DR. EDITH PECHEY PHIPSON POST-GRADUATE SCHOLARSHIP.—This scholarship, of the value of £40, is awarded annually in June by the Council of the London (Royal Free Hospital) School of Medicine for Women, who are the trustees of the scholarship. It is open to all medical women, preferably coming from India, or going to work in India, for assistance in post-graduate study. The scholarship may, at the discretion of the trustees, be held by one recipient for a term not exceeding three years. Forms of application can be obtained from the secretary of the school and must be filled in and returned by May 31st each year.

LONDON AND COUNTIES MEDICAL PROTECTION SOCIETY.—The annual general meeting of members of this society was held at the offices, Craven-street, Strand, on May 3rd, Dr. C. Owen Fowler (deputy vice-chairman of the council) presided. The chairman, in proposing the adoption of the report of the council and balance-sheet and statement of accounts, after referring to the loss which the society had sustained by the death of Dr. G. A. Heron, the President, said that Sir John Rose Bradford had consented to act as the new President. Their funds, said Dr. Fowler, had suffered from two causes: first, the young medical men qualifying during the last 18 months had immediately joined the army, with no time to think of what risks they were going to incur and no idea of the necessity of any kind of insurance in this way, and secondly a certain number of the members, having joined the army, had not been able to see that they would require any help from the society and had retired. It had been decided that if members resigned whilst on temporary military duty, the council would readmit them as members without the usual entrance fee, while should they be in arrears with their subscription, they could continue membership on paying up those arrears. Dealing with the administration of the National Insurance

Act, the chairman said that the tendency of the Commissioners and Insurance Committees to usurp unjustified powers over medical practitioners needed to be combated. With regard to the outlook of the profession, he said that midwives did 70 per cent. of the midwifery, and school clinics looked after the children when they went to school, and there were baby-shelters and the like. Then tuberculosis dispensaries looked after tuberculous cases; infectious hospitals took all the infectious cases. Measles could be treated at home by the medical officer of health, who would send round to see that the cases were properly nursed. Practice under the Insurance Act was paid for at a certain rate, and there was no dependence that the rate would be maintained for the future. Drug expenses were increased, petrol had gone up enormously, and a tax had been put on motor-cars. "And the irony of the circular from the Treasury asking us to place all our savings in Exchequer Bonds, so that they can take five shillings more out of every pound," he continued, "is that they speak of it as a tax on *unearned* income." The financial position of the society was described as "stronger this year." In 1913 it seems there was a favourable balance of over £11,600, in 1914 £13,600, and in 1915 nearly £16,000. Sir John Rose Bradford was unanimously elected President of the society, and all the vice-presidents were re-elected, as well as three of the retiring members of council and Mr. J. Herbert Parsons to take the place of the fourth. Major C. M. Fegen was re-elected treasurer, Dr. Hugh Woods general secretary, and Captain A. G. R. Foulerton financial secretary.

ROYAL SOCIETY.—The Bakerian Lecture on X Rays and the Theory of Radiation will be delivered by Professor C. G. Barkla, F.R.S., at Burlington House, London, W., on Thursday next, May 25th, at 4.30 P.M.

SOLDIERS' AND SAILORS' DENTAL AID FUND.—This fund was started on Dec. 21st, 1914, with the object of giving dental aid to sailors and soldiers and recruits in order to fit them for active service. In the first annual report just issued it is shown that applications for help had been made by 10,787 applicants, surgical treatment being given in 8900 cases, double dentures provided in 1366 cases, and single dentures in 410 cases. In 111 cases it was not possible to give assistance. The address of the fund is 43, Leicester-square, and the bankers are Messrs. Barclay and Co.

DONATIONS AND BEQUESTS.—Under the will of the late Sir Andrew Richard Scoble, P.C., K.C., K.C.S.I., of Wimbledon, M.P., the testator left £5000 to King Edward's Hospital Fund, and a similar amount for the maintenance of the convalescent home, orphanage, and other charitable works carried on by the Sisterhood of St. John the Baptist at Clewer. By the same will the Ramsgate General Hospital and Seamen's Infirmary will receive £1000.—By the will of the late Mr. Edgar Allen the University of Sheffield will receive £32,000.—Further donations amounting to £4000 have been given to Cardiff Hospital by the South Wales coal-owners, making £16,000 in all.

SOUTH LONDON HOSPITAL FOR WOMEN.—This new hospital, the building of which was begun four years ago at South Side, Clapham Common, will be opened on July 4th by Her Majesty the Queen. Though the actual cost of building has been defrayed by generous donors, money is required to equip and maintain the hospital, and the board of management are appealing for funds for this purpose. The address of the secretary is 88 and 90, Newington-causeway, S.E., and the bankers are Messrs. Cocks, Biddulph and Co., 43, Charing Cross, S.W.

MEDICAL SOCIETY OF LONDON.—At a meeting of this society held on May 15th, Lieutenant-Colonel W. Pasteur, the President, being in the chair, the following officers were elected for the session commencing in October, 1916. President: Mr. D'Arcy Power. Vice-Presidents: Dr. G. N. Caley, Mr. W. H. H. Jessop, Sir Anderson Critchett, Bart., and Dr. A. E. Garrod. Treasurer: Dr. J. Mitchell Bruce. Librarian: Dr. A. F. Voelcker. Honorary Secretaries: Mr. Hugh Lett and Dr. W. J. Fenton. Honorary Secretary for foreign correspondence: Dr. H. R. Spencer. Council: Mr. Donald Armour, Dr. R. Armstrong-Jones, Dr. F. F. H. Bateman, Sir John Broadbent, Bart., Mr. H. W. Carson, Sir David Ferrier, Dr. H. M. Fletcher, Dr. B. E. Goff, Mr. H. T. Gray, Mr. J. D. Malcolm, Dr. F. W. Mott, Dr. W. Pasteur, Dr. D. L. Roberts, Dr. J. H. Stowers, Mr. E. H. Shaw, Mr. R. J. Swan, Sir StClair Thomson, Mr. Wilfred Trotter, Dr. H. D. Waugh, and Dr. R. A. Young.

DUBLIN HOSPITALS AND THE REBELLION.—Several of the boards of governors of Dublin hospitals, who have held meetings in the past week or two, have passed resolutions of special thanks to those to whom they were indebted for the extraordinary services required in Easter week. These resolutions embrace not only the medical and nursing staffs of the hospitals, but in many cases outside medical men who willingly offered their services, traders and friends who at much risk to themselves supplied provisions, and the very many helpers, medical, clerical, and lay, who carried the wounded to hospital and gave assistance in a multitude of ways. No incident in the recent unfortunate events has been more remarkable than the way in which the city hospitals met every call made upon them, while at the same time they received every support from a host of friends.

THE WELSH NATIONAL MEDICAL SCHOOL.—At a recent meeting of the board of management of the King Edward VII. Hospital, Cardiff, it was announced that the plans of the complete medical school had been approved by the Chancellor of the Exchequer.

WOMEN'S IMPERIAL HEALTH ASSOCIATION.—One of the objects of this association is to teach the women of the Empire the elementary principles of health, particularly with reference to the care and nurture of children, and the sixth annual report affords evidence that much good work has been done in this direction. By the establishment of infant welfare centres, mothercraft exhibitions, and conferences, and in other ways women have been taught to look after their own health and that of their children—things of primary value to the nation at any time, and particularly so at the present moment. Subscriptions should be sent to the honorary treasurer, Captain E. M. Corner, R.A.M.C.(T.) (acting honorary treasurer, the Lady Chelmsford), at the Women's Imperial Health Association, 7, Hanover-square; or to Parrs' Bank, Regent-street, W.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

The Medical Re-examination of Rejected Recruits.

ONE of the points to which Parliamentary criticism was directed in the debates on the Military Service Bill was the provision in Clause 3 under which men who had previously been rejected as medically unfit for the army were made liable to re-examination. One of the subsections of the clause laid down that the exemption given under the earlier Act "shall on August 1st, 1916, cease to apply to a man who has offered himself for enlistment and been rejected since August 14th, 1915, unless the Army Council are satisfied that he need not again present himself for medical examination, and send him notice to that effect." Mr. LONG, the President of the Local Government Board, who was in charge of the Bill, was asked to explain the methods of selection to be employed in re-examining these men. The right honourable gentleman recapitulated the reasons which had induced the Government to adopt re-examination. He stated that in the pressure of the recruiting rush medical examinations were in a great many cases cursory and unsatisfactory. A great many of the certificates of unfitness were valueless, because they were insufficient for identification purposes. Moreover, it was now practicable to employ in the army men who, although they might not be fit to go to the front trenches, could discharge duties hitherto performed by men of full military fitness. Under these circumstances, the Government thought it right to review the fitness of men who had been formerly rejected. Before the Committee passed the clause it was amended in one particular. As it originally stood it placed an onus on the man to present himself for re-examination, unless specifically released. As amended the onus is shifted to the military authorities to require the man to present himself for re-examination. In the revised form the provision lays down that the exemption from service shall cease only "if the Army Council are satisfied that he should again present himself for medical examination, and send him notice to that effect."

In the course of the report proceedings Mr. TENNANT (Under-Secretary for War) stated that the War Office proposed to issue instructions to the recruiting officers to the effect that men who had been rejected at the primary military examination or subsequently by the medical board, and whose rejection was recorded in the military register, would not be called up for medical re-examination. He promised to see whether notices could not be sent at a reasonably early date informing medically rejected men whether they would be required to submit themselves to re-examination.

HOUSE OF COMMONS.

WEDNESDAY, MAY 10TH.

Treatment of Jaw Injuries to Soldiers.

Mr. PENNEFATHER asked the Under Secretary for War how many hospitals there were in this country where jaw injuries which had been suffered by our soldiers could be

treated by general surgeons and dental surgeons acting in concurrent collaboration, and how many of such hospitals had been established by the French surgical and dental authorities; and whether he was aware that serious jaw injuries could be better treated by general surgeons and dental surgeons acting in concurrent collaboration than by ordinary surgical treatment.—Mr. TENNANT answered: In all hospital centres arrangements have been made for jaw injuries to be treated by general surgeons and dental surgeons acting in concurrent collaboration. As regards the last part of the question, my medical advisers are fully aware that cases of the kind in question are best treated by surgeons and dental surgeons acting in collaboration.

Dental Surgeons in the Army.

Mr. PENNEFATHER asked the Under Secretary for War how many qualified dental surgeons had been recruited for combatant service instead of for service as dental surgeons; whether qualified dental surgeons were still being recruited for combatant service; and, if so, whether, having regard to the efficiency of the army, he would consider the advisability of employing such men as dental surgeons rather than as combatants.—Mr. TENNANT replied: I cannot give the figures asked for in the first part of the question. The answer to the second part is in the affirmative. As regards the third part I can assure the honourable Member that full provision for dental surgeons for the army has been made, and that all demands to such service for the troops, both at home and abroad, have been supplied. Further, there is a very large number of applicants for dental commissions, and no difficulty is anticipated in meeting any demands which may remain.

Mr. PENNEFATHER asked the right honourable gentleman to state the proportion of dental surgeons in the British army as compared to the number of men, and the proportion in the Canadian forces and in the French forces.—Mr. TENNANT answered: I cannot, I think, give the proportion asked for in the first part of the question, as it would be easy to deduce from it information available to the enemy regarding the total strength of the army. The War Office do not possess the information asked for in the last part of the question.

Invalid Prisoners of War.

Mr. MALCOLM asked the Under Secretary for War whether, in order to save time, he would instruct the medical officers in all prisoner camps in Great Britain to prepare a list of those invalid prisoners of war who, in their opinion, should be sent to Switzerland, subject to the confirmation of that opinion by the commission of neutral doctors when they arrived.—Mr. TENNANT said in reply: What my honourable friend suggests has already been done.

Certifying Surgeons.

Mr. LEWIS HASLAM asked the Home Secretary whether in order to save £12,500 per annum the Retrenchment Committee had reported in favour of the discontinuance of the services of certifying surgeons in connexion with factories and workshops; and, if so, whether in view of the number of inexperienced persons employed at the present time in occupations in which accidents were likely to occur he would inquire into the question of the desirability or otherwise of the adoption of this recommendation.—Mr. H. SAMUEL wrote in reply: The recommendation of the Committee extends only to reports on accidents and not to the whole duties of the surgeons. The question was investigated by the Departmental Committee on Accidents in 1911, and I do not think further inquiry would throw any fresh light on the subject.

Mr. NEEDHAM asked the right honourable gentleman whether it was his intention to take evidence before introducing legislation to dispense with the reports of certifying surgeons on accidents, based on the recommendation of paragraph 27 of the Retrenchment Committee.—Mr. SAMUEL (in a written answer) replied: This proposal has been considered by two committees, the Departmental Committee on Accidents and the Retrenchment Committee. I do not think further inquiry is called for, but I have had the advantage of meeting the representatives of the certifying surgeons and hearing a full statement of their views.

THURSDAY, MAY 11TH.

Non-poisonous Dope.

Mr. BOWERMAN asked the Under Secretary for the Home Department whether, in view of the recent fatalities which had occurred from the use of dope in aircraft works, he was aware that private makes of dope free from the poisonous spirit known as tetrachlorethane, which were claimed to be entirely non-poisonous, were freely advertised and might presumably be obtained in considerable quantities; and whether the Home Department was prepared to recommend aircraft manufacturers to use these private makes of non-poisonous dope in the meanwhile.—Mr. BRACE replied: The Home Office has been in constant communication with the departments concerned, and I understand that the arrangements which were set on foot some time ago for securing an adequate supply of a satisfactory dope free from tetrachlorethane are now approaching completion. It is hoped that the improved dope will shortly be manufactured in such quantities as to meet all requirements. The use of any other non-poisonous dope must depend upon its suitability for aircraft purposes, and this is a matter for the War Office and the Admiralty to decide.

Head Wounds.

Mr. ANNAN BRYCE asked the Under Secretary for War whether the percentage of head wounds, which he stated some months ago was 15 per cent., had now fallen; and, if so, would he say what the percentage now was.—Mr. TENNANT said in reply: No report on this subject has been rendered to the War Office, but I will obtain information.

The Imperial Institute and Experiments on Living Animals.

Mr. GREENWOOD asked the Secretary for the Colonies whether the Imperial Institute could be lawfully used for any purposes other than those mentioned in the charter of incorporation and specified in the First Schedule of The Imperial Institute (Transfer) Act, 1902; whether a part of the institute had been and was now used for experiments upon living animals; whether such experiments came within any one of the purposes specified in the said schedule, and, if so, under which of them; and, if not, whether he would undertake that such experiments should no longer be carried out in any part of the institute.—Mr. BONAR LAW answered: The reply to the first part of the question is in the affirmative, as the honourable Member will see from Section 3 of the Imperial Institute (Transfer) Act, 1902. The laboratory of the University of London, the director of which holds a licence for experiments on living animals, has been situated in the Imperial Institute building for some years past.

MONDAY, MAY 15TH.

Invalid Prisoners of War for Switzerland.

Mr. MALCOLM asked the Under Secretary for Foreign Affairs how soon he expected the Swiss Medical Commission to arrive in this country to take evidence as to German prisoners qualified by illness to be sent to Switzerland; and whether he could give the House any details as to the destinations or probable departure of the first batch of British prisoners for Switzerland.—Lord ROBERT CECIL answered: I regret that I do not known the exact date on which the Swiss Medical Commission will arrive in this country, but the Swiss Government are fully alive to the urgency of the matter. We understand that the first batch of British prisoners will be sent to Château d'Oex and its neighbourhood. It is hoped that the first batches of prisoners may leave this country and Germany by the end of this month.

The Supply of Petrol.

Sir HENRY CRAIK asked the President of the Board of Trade whether his attention had been called to the dearth of petrol for necessary purposes, such as the requirements of the medical services in country districts where long distances had to be traversed; and whether he was prepared to consider regulations which would secure that the supply for such necessary purposes should not be interfered with by its use for purposes of luxury and amusement.—Mr. RUNCIMAN replied: I am aware of the position in regard to petrol in this country, and I appointed a committee to consider what measures are necessary to secure adequate supplies of petrol for the purposes of the war and other essential needs, including medical services. The committee are now inquiring into the whole subject. So far as we can ascertain, the use of private motor-cars is less than it was.

The Re-examination of Recruits.

Mr. TENNANT (Under Secretary for War), replying to Mr. HOGGE, said: My honourable friend may rest assured that no man known rightly to hold a certificate of rejection on medical grounds issued by an authorised official will be required to be re-examined, unless there is reason to believe that his medical disability was of a temporary nature or of a nature which does not preclude his employment in some form of military service.

Sir RYLAND ADKINS asked the Financial Secretary to the War Office what would be the constitution of the medical boards which were to examine men previously rejected for the army on medical grounds; whether such boards would include civilian doctors of good standing in each locality where a board was set up; or, if the constitution of such boards was not uniform, what would be the variations in the constitution of such boards.—Mr. FORSTER replied: The medical boards by which these men will be examined are those which have been appointed and are working in each recruiting area. The presidents are appointed by the War Office and the members are appointed in the commands.

Mr. W. THORNE asked the honourable gentleman whether men who at present held certificates of exemption from military service for medical reasons and who were re-examined and subsequently called up for service would be entitled to adequate financial compensation in the shape of pensions in the event of breakdown in health following military service; and whether the War Office would accept

full financial responsibility for men called up in the circumstances named.—Mr. FORSTER answered: Such men will not be called up unless the medical authorities are satisfied that they are fit for service in the category in which they are placed. They will therefore be upon the same footing as other soldiers for pension.

The Grants for the Treatment of Venereal Diseases.

Major ASTOR asked the President of the Local Government Board what steps had been taken to notify local authorities of the financial help which would be placed at their disposal in order to provide facilities for the diagnosis and treatment of venereal diseases, and what, if any, conditions were attached to the receipt of these grants in aid.—Mr. LONG wrote in reply: I propose to issue immediately a circular letter to local authorities explaining the arrangements which are required for the provision of facilities for the diagnosis and treatment of these diseases and the conditions on which grants will be made for this purpose.

TUESDAY, MAY 16TH.

Medical Men and Motor-car Taxation.

Mr. CATHCART WASON asked the Chancellor of the Exchequer whether, in connexion with the question of exempting the motor-cars used by doctors from increased taxation, he would consider if it would be desirable and practicable to draw a distinction between cars used for business purposes and cars used for pleasure and luxury, so that petrol could be obtained at a more reasonable rate by professional and business persons.—Mr. MCKENNA replied: The existing law provides for repayment of one half of the duty used for supplying motive power to cars used by a medical practitioner or a veterinary surgeon for the purposes of his profession or trade.

Mr. CATHCART WASON: Is the right honourable gentleman aware of the practical impossibility of doctors obtaining petrol in the north?—Mr. MCKENNA: I am afraid that does not come within the purview of my department.

WEDNESDAY, MAY 17TH.

The British Medical Men at Wittenberg.

Mr. MALCOLM asked the Under Secretary of State for War whether the Royal Army Medical Corps doctors, whose gallant behaviour at Wittenberg had been rewarded by His Majesty, were volunteers for that particular work or were detailed by the Germans to do it; and whether other British doctors in other typhus camps in Germany would be recommended for similar recognition.—Mr. TENNANT answered: The three officers mentioned were detailed by the Germans for duty in the typhus camp at Wittenberg. I think my honourable friend may take it that if other officers have done equally good work they will receive equal recognition.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

BHATIA, S. L., M.R.C.S., L.R.C.P. Lond., has been appointed Resident House Surgeon at St. Thomas's Hospital.

ECCLES, R. BURTON, M.R.C.S., L.R.C.P. Lond., L.S.A., L.M.S.S.A. Lond., Medical Officer for the East Riding County Isolation Hospital, Great Driffield, East Yorks.

HALL, O., L.R.C.P. & S. Edin., L.F.P.S. Glasg., D.P.H., Medical Officer of Health for Plymouth.

MACKENZIE, FEDE M., M.B., B.S. Lond., Assistant Surgeon to the South London Hospital for Women.

NEWBIGGING T. D., M.B., C.M. Glasg., Certifying Surgeon under the Factory and Workshop Acts for the Leadhills and Wanlockhead District of the counties of Lanark and Dumfries.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

When the application of a Belgian medical man would be considered the advertisers are requested to communicate with the Editor.

BOLTON UNION.—Resident Assistant Medical Officer for Townleys Hospitals, Farnworth, near Bolton. Salary £250 per annum, with apartments, &c.

BRADFORD CITY.—Two Temporary Female Medical Officers. Salary 8 guineas per week.

BRADFORD, ROYAL EYE AND EAR HOSPITAL.—Non-resident House Surgeon or paid Clinical Assistant.

BRISTOL ROYAL HOSPITAL FOR SICK CHILDREN AND WOMEN.—Female House Physician. Salary £150 per annum, with board, &c.

BRISTOL ROYAL INFIRMARY.—House Physicians and House Surgeons. Salary at rate of £120 per annum, with board, &c.

BURNLEY, VICTORIA HOSPITAL.—Female House Surgeon. Salary £160 per annum, with residence, &c.

BURY INFIRMARY.—Female Junior House Surgeon. Salary £150 per annum, with board, &c.

DUDLEY, GUEST HOSPITAL.—Assistant House Surgeon for six months. Salary at rate of £120 per annum, with board, &c.

FOLKESTONE, ROYAL VICTORIA HOSPITAL.—Resident Medical Officer. Salary £200 per annum, with board, &c.

GRANGE OVER-SANDS, WESTMORLAND CONSUMPTION SANATORIUM, Meathop.—Second Assistant. Salary £250 to £250 per annum, with board, &c.

HUDDERSFIELD ROYAL INFIRMARY.—Senior House Surgeon and Assistant House Surgeon. Salaries £150 and £100 per annum, with board, &c

KIRKBURTON, STORTHES HALL ASYLUM, near Huddersfield.—Locum Tenens. Salary £7 7s. per week, with board, &c.

LONDON TEMPERANCE HOSPITAL, Hampstead-road, N.W.—Assistant Resident Medical Officer for six months. Salary at rate of £120 per annum, with board, &c.

MANCHESTER, CITY OF.—Female Medical Officer, to hold Consultations and Infant Clinics at Maternity and Child Welfare Centres, &c. Salary £350 per annum.

MANCHESTER, HULME DISPENSARY, Dale-street, Stretford-road.—House Surgeon. Salary £250 per annum, with apartments, &c.

MANCHESTER NORTHERN HOSPITAL FOR WOMEN AND CHILDREN, Park-place, Cheetham Hill-road.—Female House Surgeon. Salary £120 per annum, with apartments, &c.

NIGERIA, FREED SLAVES HOME.—Female Medical Missionary.

NOTTINGHAM GENERAL HOSPITAL.—Assistant House Surgeon. Salary at rate of £250 per annum, with board, &c.

NOTTS COUNTY COUNCIL, RANSOM SANATORIUM, Sherwood Forest, Mansfield.—Resident Medical Officer. Salary £200 per annum, with board, &c.

PADDINGTON GREEN CHILDREN'S HOSPITAL, London, W.—Female House Surgeon for six months. Salary at rate of £30 per annum, with board, &c.

QUEEN CHARLOTTE'S LYING-IN HOSPITAL, Marylebone-road, N.W.—Female District Resident Medical Officer for four months. Salary at rate of £60 per annum, with board, &c. Also Pathologist and Registrar. Salary at rate of £80 per annum and lunch.

ST. GEORGE'S HOSPITAL, S.W.—Radiographer. Salary at rate of £100 per annum.

SHEFFIELD, JESSOP HOSPITAL FOR WOMEN.—Female Junior House Surgeon, unmarried. Salary £80 per annum, with board, &c.

SHEFFIELD ROYAL INFIRMARY.—House Physician. Salary £120 per annum, with board, &c.

SOUTH LONDON HOSPITAL FOR WOMEN, 88-90, Newington-causeway, S.E.—Temporary Female Assistant Physician for six months. Salary 10s. 6d. for each attendance.

STOKE-ON-TRENT INFECTIOUS DISEASES HOSPITAL, Bucknall.—Female Resident Assistant Medical Officer. Salary £200 per annum, with board, &c.

THROAT HOSPITAL, Golden-square, W.—Resident House Surgeon.

VENTNOR, ISLE OF WIGHT, ROYAL NATIONAL HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST.—Assistant Resident Medical Officer.

WIGAN, ROYAL ALBERT EDWARD INFIRMARY AND DISPENSARY.—Senior House Surgeon. Salary £250 per annum, with board, &c.

THE Chief Inspector of Factories, Home Office, London, S.W., gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at Birmingham North, Warwick; and at Chirnside, Berwick.

Births, Marriages, and Deaths.

BIRTHS.

BODY.—On May 11th, the wife of Thomas M. Body, R.A.M.C., of Dowlais House, Middlesbrough, of a daughter.

BYAM.—On May 5th, in Cairo, the wife of Major William Byam, R.A.M.C., of a daughter.

COOKE.—On May 10th, at Clodiagh, Stanmore, the wife of J. Dougla Cooke, F.R.C.S. Eng., R.A.M.C., of a daughter.

JONES.—On May 4th, at Walmer House, Aldridge, to Margaret, the wife of Captain R. Francis Jones, R.A.M.C., a daughter.

NEWSHOLME.—On May 7th, at Lingfield-avenue, Kingston-on-Thames, the wife of Lieutenant Henry Pratt Newsholme, R.A.M.C., of a son.

MARRIAGES.

PEGG—GILBERTSON.—On April 29th, at St. Saviour's Church, Hitchin, John Henry Pegg, B.A., M.R.C.S., L.R.C.P. Lond., to Kathleen Elsie, younger daughter of Dr. and Mrs. J. H. Gilbertson.

ROBERTS—BROOKS.—On May 2nd, at Presbyterian Church, Kingston-on-Thames, Captain Alan T. Roberts, R.A.M.C., to Marjorie, daughter of Mr. and Mrs. William Brooks, of Sydney, N.S.W.

SMITH—BINNIAN.—On May 2nd, at St. Mark's Church, Hamilton-terrace, N.W., T. F. Hugh Smith, F.R.C.S. Eng., to Alice Charlotte, second daughter of T. W. Binnian, of Kidderminster.

DEATHS.

HARRISON.—On May 5th, suddenly, at Belize, British Honduras, the Hon. J. H. Hugh Harrison, J.P., F.R.G.S., M.R.C.S., aged 52 years.

KROHN.—On May 5th, at Arosa, Switzerland, Ronald E. S. Krohn, M.D. Lond.

LEA.—On May 7th, at Dunkirk-road, Birkdale, Southport, Arnold William Warrington Lea, M.D. Lond., F.R.C.S. Eng., in his 49th year.

LOWNDS.—On April 28th, James Richard Lownds, M.R.C.S., L.S.A. Lond., of The Elms, Newcastle-on-Tyne, aged 82 years.

MAITLAND.—On May 7th, at Ridge Mount, Winchmore Hill, Lytton Pelham Maitland, M.D., B.S. Lond., D.P.H. Cantab., aged 36 years.

ROBINSON.—On May 7th, at East Kirkby Manor, Spilsby, Lincs., Tom Robinson, M.D. Brux., aged 68 years.

N.B.—A fee of 5s. is charged for the Insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

MEDICAL NOTES ON HISTORICAL MANUSCRIPTS.

LAST year we published some excerpts[1] by a frequent contributor from a collection of State and family documents, now the property of the Duke of Portland. They contained references to medical and quasi-medical matters of the past, which were found by some readers interesting and amusing. The extracts given below are from the same contributor and may prove of equal interest.

The Hatfield House Papers.

The Historical Manuscripts Commissioners have now issued the thirteenth volume of the "Calendar of the Manuscripts of the Marquis of Salisbury preserved at Hatfield House, Hertfordshire," and at least one other volume is promised in the near future. It is pointed out in an introductory article that "the Cecil Manuscripts, although forming a private collection, may be justly regarded in the light of a national treasure. Their value is not to be described by the mere statement that they contribute to the elucidation of one of the most remarkable epochs of English history; no complete narrative of the period to which they relate could be constructed without their aid. They represent, in fact, a detached portion of the State correspondence during the memorable administration of Sir William Cecil, afterwards Lord Burghley, and of his son, Sir Robert Cecil, first Earl of Salisbury, without which the national muniments would exhibit a very imperfect record of the transactions of those stirring times." These Hatfield House papers are not so rich proportionately in reference to medical matters as are some other of the collections dealt with by the Historical Manuscripts Commission, but that they contain documents of more or less remote interest to the profession will be seen by the extracts which we subjoin from the Calendar. In some instances, it will be observed, the substance only of the correspondence is briefly indicated, whilst in other cases the actual text is quoted.

Illness of the Queen of Scots.—The physicians of the Queen of Scots and others to the Earl of Shrewsbury, 1572, June.—The letter which the Queen writes you was signed yesterday, but it is dated to-day, because bearer could not leave sooner. Her Majesty gets worse every hour and therefore think right to advertise him of the same. Nothing remains on her stomach; she vomited 10 or 12 times last night, nothing but phlegm. For some days she has hardly eaten anything. The fever has increased. In her great illness of the winter a year ago she had little fever, and they fear that this evil, which accompanied the pain in her side and stomach, is alone sufficient to imperil her life. Ask for speedy help, otherwise they fear it will arrive too late.—Sheffield Castle, June, 1572.

A Doctor's Grievance.—Sir Thomas Gresham to Lord Burghley, London, 1573, Aug. 9.—Craves Burghley's letter of discharge for Dr. Langton, one of his medical attendants, whom the physicians mean to send to Ireland, for which he is very unfit, being sore indebted and 60 years of age. Langton has been very evilly handled by one Dr. Ludford "in plucking down his testimonial upon the Royal Exchange of the cures he hath done, here and otherwise, since his coming hither, which was never seen the like done." Desires Burghley to procure the Queen's warrant to the physicians and all others that Langton be no further molested. "I believe, if it be to your lordship's pleasure to use him, he will, with the leave of God, heal you of your gout, if he do take upon him to do it." Dr. Ludford is a fit man to be sent to Ireland "as well for his experience of pothecary ware as for his physic."

Bath and Buxton Waters.—The Earl of Leicester to Lord Burghley, 1577, June 13 [presumably from Bath].—Touching his health, he and his brother have great cause to like and commend the water. They observe their physician's order diligently, and find great pleasure both in drinking and bathing in the water. Thinks it would be good for Burghley, but not if he does as they hear he did last time, take great journeys abroad 10 or 12 miles a day and use liberal diet with company dinners and suppers. They take another way—dining two or three together now Lord Pembroke is there, having but one dish, or two at most, and taking the air afoot or on horseback moderately. If Burghley comes next year, as he says, let him not bring too many with him. The house is so little as a few fills it, and hard then to keep sweet.

The Earl of Leicester to Lord Burghley, 1577, July 23.—Her Majesty wills him to write earnestly to Burghley to send her a tun of Buxton water in hogsheads, which are to be thoroughly seasoned with the water beforehand.

The Same to the Same, 1577, Aug. 3.—Your water is here safely arrived, and I told her Majesty of it, who, now it is come, seemeth not to make any great account of it. And yet she more than twice or thrice commanded me earnestly to write to you for it, and after I had so done asked me sundry times whether I had remembered it or no, but it seems her Majesty doth mistrust it will not be of the goodness here it is there; besides, somebody told her there was some bruit of it about, as though her Majesty had had some sore leg. Such like devices made her half angry with me for sending to you for it, but I had rather be shent so than not to have performed her express commandment before. Nevertheless, she thanks your lordship for the well and careful sending of it. She is well in health and without any other grief but the old aching sometimes when she takes cold in her legs.

The Earl of Sussex to Lord Burghley, Aug. 7, 1582.—Found the well so cold, by reason of the ill-weather, as he could not but very seldom have use of it. The water he had drunk liberally, beginning with three pints, and so increasing daily a pint till he came to eight pints, and thence descending daily a pint till he shall again return to three pints, which will be on Thursday next. Means to return after he shall have made an end of the drinking.

Treatment of "The Purples."—Sir Henry Unton[2] to the Earl of Essex.—I acknowledge your favour in writing to me by Symondes and beseech you to excuse my hasty and short scribble, being scarce able to put pen to paper by a fall from my horse, which putteth me to great pain and taketh away the use almost of my whole arm. From Coucye, this 4th of March, 1595.

M. de Montmartin to the Earl of Essex.—The extreme sickness of Sir H. Unton is a matter of much regret to all the well disposed at the Court. The King went to see him yesterday.—The Camp before La Fere, 25 March, 1595-6.

Sir Henry Unton to Lord Burghley, 1595-6, March 17.—On the subject of his sickness; and giving an account of his interview with the King of France, who, "although dissuaded by his own physicians that do attend me, for the danger of contagion," on Unton's wishing it came to him, saying that "he had not hitherto feared the harquebuse shot, and did not now apprehend the purples."

Sir Henry Unton to the Earl of Essex, from Coucy, March 1st 1595-6.—A despatch on the subject of his mission, and saying "I am sorry that by reason of the extremity of my present sickness I am not able to make that answer to your letters which I desire." The following is underwritten: "We have been forced for the authority of this dispatch to make my lord ambassador act more than a whole man than truly he is; but I assure your lordship he is yet in very great peril, having his fever continually upon him, which hath brought him to great weakness, and doth not suffer him to take any kind of rest. I hope, notwithstanding, that within six or seven days, above which time his extremity cannot last, he will be able to despatch me."—Tho. Edmondes.

William Faule to the Earl of Essex, from Coucy, March 21st 1595-6.—I came hither on Friday last, not without some danger escaped as well by sea as land. But the worst of ills is that I found my lord ambassador in such miserable weak state that all men despaired of an hour's longer life. His sickness (a malignant hot fever) began with extremity in his head, and about the seventh day his utterance failed him; but this accident was no sooner cured by the careful learned skill of the King's physician (De Lorrayne, doctor of Montpellier), but certain purple spots appeared about his heart, whereupon with the advice of La Ryviere, the other physician, they gave him *Confectio Alcarmus* compounded of musk, amber, gold, pearl, and unicorn's horn, with pigeons applied to his side, and all other means that art could devise, sufficient to expel the strongest poison and he be not bewitcht withal. These accidents being holpen which arose of the malignity of his disease, yet his grief increased worse and worse; but the 17th day of his sickness, and the 20th of March, being his last critical day, was worst of all, so that in the accidents of sickness his sickness is cured, and yet he is extremely sick still. This present Monday is the one and twentieth day of his disease, in which space he hath not slept, to their seeming which watch about him: his food is only jelly and such nutritive extracted matter, and albeit his body be brought so low that nature seemeth altogether spent, yet his memory and speech serve him perfectly though to little use. God is Almighty and may do much to restore him contrary to man's expectation, and therefore I purpose to expect the end. [Sir Henry Unton died a day or two afterwards.]

(To be continued.)

HEALTH AND SANITATION IN BRITISH EAST AFRICA.

A REPORT on the affairs of the East Africa Protectorate for the year 1914-15 has been prepared by Mr. C. C. Bowring, C.M.G., the Chief Secretary and Deputy Governor. The area of the Protectorate is approximately 200,000 square miles, and the population has been estimated at 4,000,000 but no complete census has ever been taken. It appears from the medical section of Mr. Bowring's report that in the Coast Zone there has been a notable decrease of malaria. During the year there were 7 cases of blackwater fever with 3 deaths, two of the victims being Europeans. There were 33 new cases of cerebro-spinal meningitis in Mombasa with 15 deaths. There were only 2 cases of plague (both fatal), as compared with 208 in the previous year—a tribute to the soundness of the antiplague campaign inaugurated by Professor Simpson in 1914. Dysentery is still prevalent at Mombasa amongst the Kikuyu labourers. In the Mountainous Zone 3851 patients were treated for malaria—a larger number than usual; and in Nairobi the infection appears to be widespread amongst natives, as post-mortem examination reveals a large percentage with enlarged spleen. There were 8 cases of blackwater fever, 1 (European) being fatal; 136 cases of cerebro-spinal meningitis with 51 deaths; and 9 cases of plague in Nairobi with 6 deaths. In the Kenya and Nyanza Provinces over 4000 cases of malaria were treated, and there were 45 cases of cerebro spinal meningitis with 28 deaths—a decided decrease as compared with the previous year. Forty-one cases of plague occurred amongst natives, 38 of which proved fatal, and there was one case of a European woman, who recovered. In the Desert Zone there was an appreciable decrease in the number of cases of communicable diseases. Two cases of blackwater fever were reported—the first that have been brought to notice in

[1] THE LANCET, vol. i., 1915, pp. 55, 111, and 168.

[2] Sir Henry Unton had been sent at this time by Queen Elizabeth as a special ambassador to King Henry IV. of France.

this zone since 1902. Beri-beri is still liable to be a source of anxiety in the upper reaches of the Juba. The type, however, appears to be milder, 70 cases being treated as out-patients and 2 as in-patients, with no deaths. Anti-malarial measures are being actively prosecuted in Mombasa, Nairobi, and Kisumu, the presence of sanitary inspectors exercising a beneficial influence. Quinine prophylaxis has been adopted in various localities with some amount of success. "Millions" fish have been imported from Zanzibar and have been established in tanks at Mombasa. No sewage works have yet been installed in any township in the country; night soil is disposed of by dumping into the sea, trenching, reception into cesspools, or distribution on the ground. The out-break of war and consequent financial disturbance has resulted in the much-needed water schemes for Kisumu and Nakuro being either held in abeyance or materially curtailed; the proposed new water-supply for Mombasa has not yet reached that town; and the protective works at Nairobi intake have not been commenced. The European population of the Protectorate includes about 100 in Nyanza Province, 1600 in Naivasha Province, 243 in Kenya Province, 2800 in Ukamba Province, 360 in Seyidie Province, and smaller contingents in other districts.

W. S.—Sinn Fein means literally "ourselves." The words are the title and expression of a movement which denies the lawful existence of the Incorporating Union in contra-distinction to Unionism and Parliamentarianism. Sinn Fein declares Ireland to be by natural and constitutional right a sovereign State, and teaches that the election of Irishmen to serve in the British Parliament is treason to the Irish State, as no lawful power exists, has existed, or can exist in that Parliament to legislate for Ireland. It advocates the withdrawal of the Irish representation from Westminster and the formation in Ireland of a voluntary legislature endowed with the moral authority of the Irish nation.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, May 17th, 1916.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
May 11	30·060	S.	...	80	58	46	48	50	Cloudy
,, 12	29·970	S.W.	0·30	103	64	50	53	54	Overcast
,, 13	29·820	N.W.	...	74	55	51	51	52	Raining
,, 14	29·910	W.	0·10	99	61	45	50	57	Cloudy
,, 15	29·840	W.	...	107	67	53	55	57	Cloudy
,, 16	30·060	N.W.	...	91	62	48	51	55	Cloudy
,, 17	30·280	S.W.	...	104	70	53	54	56	Cloudy

BOOKS, ETC., RECEIVED.

BAILLIÈRE, TINDALL, AND COX, London.
The After Treatment of Operations. By P. Lockhart-Mummery, F.R.C.S. Eng., B.A., M.B., B.C. Cantab. Fourth edition. Price 5s. net.
Operative Midwifery. By J. M. Munro Kerr, M.D., C.M. Glasg. Third edition. Price 25s. net.
Diseases of Infants and Children. By H. D. Chapin, A.M., M.D., and Godfrey Roger Pisek, M.D., Sc.D. Third revised edition. Price 15s. net.
Veterinary Therapeutics. By E. Wallis Hoare, F.R.C.V.S. Third edition. Price 18s. net.

CASSELL AND CO., LIMITED, London.
Serums, Vaccines, and Toxins in Treatment and Diagnosis. By William Cecil Bosanquet, M.A., M.D. Oxon., F.R.C.P. Lond., and John W. H. Eyre, M.D., M.S. Dunelm, F.R.S. Edin. Third edition, illustrated. Price 9s. net.

CHURCHILL, J. AND A., London.
Cure of Obesity and Obese Heart. By J. S. Kellett Smith, F.R.C.S. Eng. Price 3s. 6d. net.

LEWIS, H. K., AND CO., London.
Pathology of Tumours. By E. H. Kettle, M.D., B.S. Lond. Price 10s. 6d. net.

LONGMANS, GREEN AND CO., London.
Respiratory Exchange of Animals and Man. By August Krogh, Ph.D. Copenhagen. Price 6s. net.

WRIGHT, JOHN, AND SONS, Bristol.
The Medical Annual, 1916. Price 10s. net.

The following magazines, journals, &c., have been received:—British Dental Journal, West London Medical Journal, Annali d'Igiene, Cleveland Medical Journal, Therapeutic Gazette, Medicinskt Arkiv, Quarterly Journal of Medicine, Medical Review, British Journal of Children's Diseases, Public Health, St. Paul Medical Journal, Quarterly Journal of Experimental Physiology, Journal of Anatomy and Physiology, Edinburgh Medical Journal, Canadian Medical Association Journal, American Journal of Orthopedic Surgery, Ophthalmology, Journal of State Medicine, Surgery, Gynecology, and Obstetrics, Maryland Medical Journal, Archives of Pediatrics, Archives of Radiology and Electrotherapy, American Journal of Clinical Medicine, Medical Review of Reviews, Annals of Tropical Medicine and Parasitology, Medical Times, British Journal of Dental Science, &c.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY, Burlington House, London, W.
THURSDAY.—4.30 P.M., Bakerian Lecture:—Prof. C. G. Barkla: X Rays and the Theory of Radiation.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.
MEETINGS OF SECTIONS.

Monday, May 22nd.

ODONTOLOGY (Hon. Secretaries—F. R. Smyth, F. N. Doubleday): at 8 P.M.
Annual General Meeting.—Election of Officers and Council for Session 1916-1917.
Paper:
Dr. J. Howard Mummery: The Structure and Arrangement of the Enamel Prisms, especially as shown in the Enamel of the Elephant.

Tuesday, May 23rd.

MEDICINE (Hon. Secretaries—Charles R. Box, W. Cecil Bosanquet): at 5.30 P.M.
Annual General Meeting.—Election of Officers and Council for Session 1916-1917.

Wednesday, May 24th.

HISTORY OF MEDICINE (Hon. Secretaries—Leonard G. Guthrie, J. D. Rolleston): at 4.30 P.M.
Annual General Meeting.—Election of Officers and Council for Session 1916-1917.
Dr. Michael Foster: Stick Pomanders.
And other Exhibits.
Papers (at 5 P.M.):
Dr. J. A. Nixon and Dr. Charles Singer: Miniatures of the Bristol Guy de Chauliac MS.
Dr. Charles Singer: Some Figures bearing on the Practice of Blood-letting in the Fourteenth, Fifteenth, and Sixteenth Centuries.
Mr. R. R. Steele: A Note on the Scientific Work of Roger Bacon.

Thursday, May 25th.

NEUROLOGY (Hon. Secretaries—H. Campbell Thomson, C. M. Hinds Howell): at 8 P.M.
Annual General Meeting.—Election of Officers and Council for Session 1916-1917.
Clinical Cases will be shown, and anyone desiring to show Cases is requested to communicate immediately with the Hon. Secretary, Dr. Hinds Howell, 145, Harley-street, W.

Friday, May 26th.

STUDY OF DISEASE IN CHILDREN (Hon. Secretaries—J. D. Rolleston, A. S. Blundell Bankart, Sidney Gilford): at 4.30 P.M.
Annual General Meeting.—Election of Officers and Council for Session 1916-1917.
Cases:
Dr. Eric Pritchard: Severe Rickets.
Dr. W. Mitchell Smith: (1) Pigmented and Hairy Nævus with Molluscous Tumours; (2) Giantism.
Dr. E. Cautley: (1) Infantilism; (2) Optic Neuritis (two cases).
Mr. A. S. Blundell Bankart: Hemihypertrophy.
Dr. J. Walter Carr: Juvenile General Paralysis.
Short Paper:
Dr. J. Lawson Dick: The Teeth in Rickets.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.
MONDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye. Dr. Simson: Diseases of Women.
TUESDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Addison: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.
WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations. Dr. Simson: Diseases of Women.
THURSDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye.
FRIDAY.—10 A.M., Dr. Simson: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Addison: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.
SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Eye Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.
MONDAY.—Clinics:—10.30 A.M., Surgical Out-patients (Mr. E. Gillespie). 2.30 P.M., Medical Out-patients (Dr. T. R. Whipham): Gynæcological Out-patients (Dr. Banister). 3 P.M., Medical In-patients (Dr. R. M. Leslie).
TUESDAY.—2.30 P.M., Surgical Operations (Mr. Garson). Clinics:—Medical Out-patients (Dr. A. G. Auld); Surgical Out-patients (Mr. Howell Evans); Nose, Throat, and Ear Out-patients (Mr. C. H. Hayton). Radiography (Dr. Metcalfe). 3.30 P.M., Medical In-patients (Dr. A. J. Whiting).
WEDNESDAY.—Clinics:—2.30 P.M., Throat Operations (Mr. C. H. Hayton). Children Out-patients (Dr. T. R. Whipham); Eye Out-patients (Mr. R. P. Brooks); Skin Out-patients (Dr. H. W. Barber). 5.30 P.M., Eye Operations (Mr. R. P. Brooks).
THURSDAY.—2.30 P.M., Gynæcological Operations (Dr. A. E. Giles). Clinics:—Medical Out-patients (Dr. A. J. Whiting); Surgical Out-patients (Mr. Carson); Radiography (Dr. Metcalfe). 3 P.M., Medical In-patients (Dr. R. M. Leslie).

FRIDAY.—2.30 P.M., Surgical Operations (Mr. Howell Evans). Clinics:—Medical Out-patients (Dr. A. G. Auld); Surgical Out-patients (Mr. E. Gillespie); Eye Out-patients (Mr. R. P. Brooks).

THE THROAT HOSPITAL, Golden square, W.
MONDAY.—5.15 P.M., Special Demonstration of Selected Cases.
THURSDAY.—5.15 P.M., Clinical Lecture.

ROYAL INSTITUTION OF GREAT BRITAIN, Albemarle-street, Piccadilly, W.
TUESDAY.—3 P.M., Prof. C. S. Sherrington: Unconscious Nerves—their Functions in External Life. (Lecture II.)
FRIDAY.—5.30 P.M., Prof. C. G. Barkla: X Rays.

UNIVERSITY OF BIRMINGHAM, Lecture Theatre of the Medical School.
WEDNESDAY.—4.30 P.M., Ingleby Lecture:—Dr. T. S. Short: Gastric Ulcer and its Complications.

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The Chadwick Lectures

ON

TYPHUS FEVER IN SERBIA.[1]

Delivered at the Royal Society of Medicine on Oct. 20th and 29th and Nov. 3rd, 1915,

BY R. O. MOON, M.D. OXON., F.R.C.P. LOND.,

CONSULTING PHYSICIAN, WESTERN GENERAL DISPENSARY, MARYLEBONE, ETC.

LECTURE I.

MR. PRESIDENT AND GENTLEMEN,—There are few more remarkable triumphs of sanitary science than the way in which it has diminished epidemic disease, and though cases of typhus from time to time appear in England, Scotland, and Ireland, there has been nothing in the nature of a typhus epidemic in these islands for more than 50 years.

Great as have been the triumphs of bacteriology in the realm of disease, the diminution of typhus cannot fairly be counted among them. All analogy suggests that typhus belongs to that class of disease which is known as the specific fevers or acute exanthemata, such as small-pox, scarlet fever, and measles. The clinical course of the disease, at least in well-developed cases, is so characteristic that it may be said to follow certain definite laws. This unvarying regularity is found in the case of few other diseases except the acute specific fevers, and indicates that it is due to some form of micro-organism. We have not, however, discovered the micro-organism of typhus fever even if we have good ground for surmising the way in which it is propagated, of which I shall speak in my third lecture. Though we have not yet discovered the germ or seed of this disease, we do know a great deal about the soil which is favourable for its growth and development, and in particular we know that overcrowding, dirt, and ill-nourishment are the grim conditions which help to promote this epidemic, and it is one or more of these conditions which we almost invariably find in the history of the different epidemics we are about to discuss.

War has always been the condition *par excellence* in which typhus has flourished, for in times of war there are sure to be large bodies of men frequently crowded together in most insufficient space; it is difficult for them to keep clean, and unless the commissariat is very perfectly managed there are sure to be occasions when it will break down and the men in consequence be ill-fed. One of the names for the disease is "morbus castrensis" or "military fever." In time of war it is exceedingly difficult to put into practice the teachings of sanitary science even in countries where such teachings are observed in times of peace. But in Serbia the doctrines of sanitary science, which even in countries like England and France are comparatively modern, can scarcely be said to have existed in times of peace, so there was no question of being able to put them into practice in the midst of a war—it was a question of beginning to learn the art of sanitation from the beginning. Had Serbia in the past been so fortunate as to have possessed a Chadwick she would certainly have suffered less from her terrible epidemic of typhus.

Typhus, as we know it to-day, was not definitely described until about the middle of the eighteenth century (1759) by a French physician, Boissier de Sauvages. The term "typhus" (τῦφος), which means literally smoke or fog, occurs frequently in the writings of Hippocrates to denote the dull, obfuscated mental condition into which many patients suffering from febrile diseases often fall, and which is a special characteristic of typhus fever. A comparison of the disease as we now know it with the descriptions of older authors shows that it has not in the course of time changed in any essential particular. Briefly, typhus, as we know it to-day and as it has probably always been in the past, is a disease characterised by sudden onset with high fever and severe pains in the head. From the third to the fifth day appears a very definite rash of macular rose spots—hence another of its names, "spotted fever"; it has a superficial resemblance to the rash of measles. This rash is usually seen first on the chest and upper part of the abdomen, then may pass to the extremities and face; the latter is always flushed, with injected conjunctivæ and contracted pupils. There is always some amount of delirium, and generally it is a very striking feature of the disease, patients frequently becoming very violent and even maniacal. The high fever continues for about 14 days—hence yet another name for it was 14-day fever—and then falls rapidly, if not suddenly, and as a rule the patient is out of danger, though left very prostrate, but with few complications. The mortality is a high one, about three times that of enteric fever, death as a rule occurring between the ninth and twelfth days of the disease.

In reading historical accounts of the various diseases which have prevailed in war-time in the past and which have decimated whole armies, we are struck with the frequency with which these diseases bear a close resemblance to typhus, and going back into remote antiquity there is little doubt that the plague of Athens at the beginning of the Peloponnesian War (430 B.C.), which has been so graphically described by Thucydides, bears a closer resemblance to typhus than to true Oriental plague, but of this relationship I shall speak more fully in the next lecture. The same is true of the so-called plague which devastated Rome in the time of Marcus Aurelius, and which is described by Galen. Frascatorius describes the symptoms of an epidemic fever prevailing in Italy in 1505, and again in 1528, which resembles what we know as typhus and which he distinguished from true plague (*febris vere pestilens*); the disease seemed so like measles that medical men found it necessary to point out the distinctions between the two affections. On both occasions its appearance was preceded by inclement weather and the almost total destruction of the crops. It was, doubtless, typhus and not plague which furnished the Black Assizes early in the sixteenth century, when judges, sheriffs, and aldermen were suddenly attacked with fatal illness which had spread from the prisoners brought up for trial; hence the disease used to be called "jail fever," and with reference to it Bacon said: "The most pernicious infection next to the plague is the smell of the jail when prisoners have been long and close and nastily kept, whereof we have had in our time experience twice or thrice, when both the judges that sat upon the jail and numbers of those that attended the business or were present sickened upon it and died. Therefore it were good wisdom that in such cases the jail were aired before they be brought forth."

In all diseases which are liable to take on an epidemic character we certainly find variation in the different epidemics, some being of greater and others of less severity, while certain symptoms which seem more prominent in one epidemic fall into the background in another, and typhus forms no exception to this rule.

We will now consider some of the epidemics of typhus fever which have occurred since the disease was definitely recognised and described. Here Ireland has an unenviable notoriety. Typhus in the British Isles used to be called "the Irish ague"—again a new name for the disease. The first epidemic was observed by Rogers at Cork in 1708; the preceding spring and summer were the coldest and the harvest the worst that had occurred for 47 years, while the winter of 1708–09 was characterised by the greatest frost all over Europe within the memory of man. In 1728 typhus returned to Ireland after a succession of three bad harvests. Oatmeal rose to an extravagant price, and food of all sorts was so scarce that riots occurred all over the country, to suppress which the military were called out. The epidemic lasted four years, reaching its climax in 1731. Early in the nineteenth century there was a serious epidemic of typhus which decimated Ireland. The years 1797–1800, prior to the outbreak, had been noted for the very wet seasons and peculiarly bad harvests; the price of bread, potatoes, and every necessary rose enormously. The disease reached its zenith in 1800–01, but in 1801 there was a good harvest and the disease began to decline, thus indicating how dependant it was on a poor supply of food. It was in consequence of this epidemic that numerous fever hospitals were first established in this country, beginning with Chester, Liverpool, Manchester, Norwich, Dublin, and Cork; the London Fever Hospital was first instituted in 1802.

The next serious epidemic in Ireland was in 1817. The winters from 1813–16 had been of intense severity; in February, 1816, the thermometer in London fell to 5° F.

[1] Dr. Moon went to Serbia early in 1915 just after our gallant ally's signal victory over the Austrians, only returning to England when he had himself contracted typhus fever.—ED. L.

below zero. This winter was followed by a cold and wet summer and autumn, causing a complete failure of the harvest and of the potato crop. There was extreme distress among the poor, who are described as wandering about the country gathering nettles, wild mustard, and other weeds to satisfy the cravings of hunger. The population of Ireland about this time was estimated at 6,000,000 and the number of sick at 737,000. In Dublin there were 70,000, or one-third of the inhabitants, victims of the disease. The total number of deaths was 44,000. It was at this time that there commenced on a great scale the migration of the poorest classes of Irish into the great towns of England and Scotland.

The greatest epidemic of typhus in Ireland followed the potato famine of 1847. The Irish themselves called the fever "road fever," because it specially attacked vagrants and road menders. It raged specially in Cork, Belfast, and Skibbereen, the mortality varying from 10 to 30 per cent.; one single hospital—the Cork Street Fever Hospital in Dublin—took in 12,000 cases in 11 months. The disease was imported to a great extent by the Irish into the large towns of Scotland and England and even America. In one year 90,000 Irish left their homes. The greatest activity on the part of the Government was unable to arrest the progress of the pestilence, which, indeed, could only be rooted out by a complete change in the political and social conditions of the island. The epidemic spread to Glasgow and Liverpool, but in the latter it was entirely confined to the Irish population, and of these in the first three months of the year 120,000 emigrated. Thus, in the case of Ireland, we find typhus induced by famine acting upon a population which was constantly in a state of semi-starvation.

Turning now to the relation of typhus to war, which more immediately concerns us to-day, the first recorded instance of what we must assume to be typhus in war of modern times was when Granada was besieged by Ferdinand in 1489, the disease which then broke out among the garrison was called by the Spaniards "el tabardiglio" from its spotted appearance. 17,000 troops died from it. Similarly, when Genoa was besieged by the French in 1799 the half-famished garrison fell a victim to typhus.

Typhus was a grim accompaniment of the Napoleonic Wars. After Austerlitz (1805) it was spread by the Russian prisoners and was found both in the victorious and defeated armies. It was carried to Strasburg, Augsburg, and the vicinity of Basle, eastwards to Moravia, Bohemia, and Galicia, and with their prisoners the French carried this unwelcome guest into the very heart of France, where it spread extensively in Autun, Semur, and Langres. After Napoleon's great victory over the Prussians at Jena and Auerstadt the latter suffered severely from typhus, and the hospitals of the great towns of West and East Prussia, such as Königsberg, Dantzig, and Thorn, were full of the sick.

In 1808–09 Spain and Portugal were the chief seat of typhus. At the siege of Saragossa (1808) typhus was a veritable scourge among the besieged, and from the Spanish prisoners it passed into France; for the Spaniards who fell into the hands of the French belonged mostly to undisciplined bands exhausted by cold and hunger. Since there were no carts they had to be dragged along impassable roadways and spend the nights in filthy hovels, lying on rotten straw; it was under such circumstances that typhus specially developed, but it was worst at Bourges, where all the prisoners were herded together. About the same time typhus was brought to England by the troops landed after the famous retreat from Corunna; the origin was here attributed to their being overcrowded on board ship and to mental depression.

Perhaps the most disastrous epidemic of typhus was that which overtook the French army in Russia during Napoleon's great campaign there in 1812. Before Napoleon arrived at Moscow typhus had already been rife in the Russian army and had even appeared at St. Petersburg. As soon as Napoleon crossed the Niemen on June 23rd the army suffered greatly from want of proper food owing to the country being deserted by the inhabitants and purposely laid waste. Consequently the French during their disastrous retreat fell an easy prey to the pestilence, for the whole country in the line of their retirement was deserted and laid waste, so that they were famished with hunger, the large number of dead horses poisoned the air, while the overcrowded hospitals, where even straw was lacking, became breeding-places of typhus. The whole sanitary arrangements, we are told, were of the most miserable description, and the means of treating such a thing as diarrhœa were confined to rice water and alcohol. The 3rd Army Corps on its arrival at Moscow numbered only 12,000 instead of 43,000 men, and of this same army corps, under the command of Maréchal Ney, there were only 20 men remaining when they reached Smolensk on the retreat from Moscow. After leaving Wilna the daily food of the soldier had consisted of roasted bread soaked in brandy. The typhus reached its worst in December, 1812, and January, 1813. At Wilna of 30,000 French prisoners 25,000 died (or 85 per cent.). In a single ward of the hospital of St. Ignatius, consisting of 50 beds, three successive relays of patients all perished except one. There was no question of any medical care, and the bleeding to which some doctors resorted only hastened the end of their patients. Of venesection Napoleon's famous surgeon, Baron Larrey, said: "La saignée préconisée et mise en pratique par quelques médecins dans cette épidémie, a été constamment funeste." The main cause of the high mortality was the wretched condition of the soldiers owing to their great privations. In 1813 the siege of Torgau, a small fortress on the Elbe, was characterised by a great mortality from typhus. There was excessive overcrowding in the hospitals and the mortality there rose to 33 per cent. and an exceptionally warm and damp winter seems to have made the mortality rise still higher. In spite of every effort the average number of the sick was 12,000. In November the total number of the dead was 8000, and of the 5000 inhabitants 12 per cent. died in a few weeks. The epidemic began to abate at the beginning of December, partly owing to the departure of the German troops and partly through the diminution of overcrowding by men and horses, many of the latter being killed for want of food. Another important cause of the lessening of the disease was the bombardment at the end of December, which by breaking a large number of windows and doors admitted plenty of fresh cold air, which is the greatest enemy of typhus. From September to January there were 20,000 deaths, not counting the numbers of corpses thrown by the soldiers into the Elbe in such heaps that they stopped the working of the mills for a time. After the entry of the Prussians the mortality during the next three months sank to 300, and by the end of February the epidemic could be regarded as extinguished. A striking example of the good results of fresh air is to be found in the Memoirs of Count Bengnot, who administered the Grand Duchy of Berg from 1803 to 1813. "After the battle of Leipsic," he writes, "Daru sent me 1600 sick and wounded. Dr. Abel, a Prussian doctor who had practised at the Court of Frederick the Great, came to my assistance. The weather was fine and dry. Dr. Abel put the sick into the courtyards of the castle of Bensberg and into the garden of Benrath, separating them as far as possible from one another and providing them with caps which protected them by day from the sun and by night from the cold. They were given nothing except soup and wine." The mortality was none the less considerable, but far removed from that in the hospitals of Mainz, Cologne, and Wesel. Large numbers of the civil population died at Erfurt, Dresden, and Breslau. In the Duchy of Nassau, with 300,000 inhabitants, during the great spread of typhus in the winter of 1813–14 43,000, or 14 per cent., of the population fell ill of the disease, and 20 per cent. of those attacked died. Many patients, and particularly doctors, ascribed their recovery to the fact that for weeks together in the cold winter they were transported from one provisional halting-place to another without being taken into the overcrowded hospitals, for here typhus and dysentery raged in the most appalling manner. Doctors seem to have suffered very largely in this epidemic, and it is recounted that in Leipsic, after the battle (1813), nearly all the medical students fell ill and most of them died.

One of the worst epidemics of typhus occurred in Upper Silesia from 1846 to 1848. Germany, except in times of war, had not been specially subject to typhus, and, in fact, after 1830 it was generally thought to have died out there. As is usual in these epidemics in peace time, prior to the outbreak there had been continued wet, with the consequent result of several bad harvests. The climate of this region is more inclement than might be expected from its latitude (50°), which is about the same as that of Cornwall; the soil is mainly clay; atmospheric deposits are considerable, and

the houses of the country population were mostly situated on a low-lying level and generally of a very wretched quality. Serious poverty had existed for some time owing to the decay of the linen industry which made wages very low, and the nourishment of the poorer classes was extremely bad. The food of the ordinary labourer consisted mainly of potatoes, cabbage, and buttermilk, meat was seldom enjoyed, there was a great love of drink, and the population suffered much from the destructive effects of endemic diseases, such as malaria. In 1847 a complete famine broke out and the poverty of the poorer classes became still further aggravated, so that the unfortunate peasant could no longer procure even the miserable rations to which he had accustomed himself. Roots and fungi and clover and couch grass were the only means he could find for abating his hunger. Nothing therefore could have been more favourable for an outbreak of typhus. Added to this the main features of the national character were then said to be slackness, ignorance, and superstition, which found rich nourishment in the fanaticism of the half-educated priests and the miserable condition of the national schools; and we can well imagine that the administrative measures for coping with such an epidemic were fairly inadequate, especially in the hands of the incompetent provincial officials who reigned supreme prior to the revolutionary movement of 1848. Even after the pestilence had come to an end in February, March, and April, 1848, one-third of the population of Ratibor (containing 60,000 inhabitants) had to be maintained at the public cost. The main characteristics of this epidemic were bronchial catarrh and pneumonia, gangrene of the extremities was common, and also hæmorrhages, and there was said to be a great tendency to relapses, which were often fatal; as a rule, relapses are most exceptional in typhus. One of the most distressing effects of the disease was the way in which in the general need every human feeling became suppressed. Thucydides has noted a similar effect upon men's minds caused by the plague at Athens. In May, 1848, the epidemic reached its end, but for a long time its effects were manifest.

We now come to the Crimean War (1854–56). Typhus caused the greatest havoc in the French and Russian armies, especially after the fall of Sebastopol. During the first six months of 1856 it was computed that out of 120,000 French troops 12,000 were attacked by typhus and half that number died of it. The cold of the winter 1855–56 was extreme and made the typhus worse. The enormous devastation caused by sickness is shown by the fact out of 303,260 soldiers who had been on the battlefield 200,000 (64 per cent.) had been in hospital, and only a quarter of these on account of wounds. The French troops returning home from the Crimea carried the contagion of typhus with them to the south coast of France, where it spread widely in Marseilles and Avignon, whereas up to that time the French had considered themselves fairly free from disease. On the whole, the English army suffered much less than the French from typhus in the Crimean War, and it is interesting to have a German authority for saying that "even at that time hygienic measures were far better understood and carried out in the English camp." Jacquot, chief medical officer of the French army, remarks on the French army in the Crimea: "There is no typhus in the summer when the soldier lives in the open air and leaves the barracks and tents open. With the winter season typhus developed twice running, and twice it disappeared on the return of the warm season which permitted free ventilation of the dwellings and life in the open air." From an official report we read that "the French soldier in the Crimea passed the last six months of the war under circumstances most unfavourable to health—namely, overcrowding in mud-floored tents or earth pits, surrounded by and immersed in deleterious exhalations from a soil sodden with animal and vegetable matters of all kinds, its surface being covered with indescribable filth. The severity of the season kept the men closely huddled under shelter, every possible entry of cold air being patched up. There was, further, an insufficiency of wholesome food, as proved by the extraordinary virulence of scurvy in the camp." The restoration of peace and an abundant harvest in 1856, with increased attention to sanitary arrangements among the poor were speedily followed by a subsidence of fever, and for four years typhus was less prevalent in London and the United Kingdom than at any previous period up to that time. In 1857 only 56 cases were admitted into the Edinburgh Royal Infirmary, and in both January and May that institution did not contain a single case. In London at this time it began to be thought possible that the London Fever Hospital should be devoted to other purposes, but in 1861 a serious epidemic of typhus broke out, the numbers in 1862 reaching a very exceptional height, while it also occurred in Glasgow and Liverpool.

In the Russo-Turkish War of 1876–78 the sanitary conditions were appalling. Of 200,000 patients, 50 per cent. were attacked by typhus, and half of those who were attacked died. During this epidemic the surgeons were the worst sufferers, the mortality among them reaching 60 per cent. On the other hand, it is interesting to note that in the Franco-German war of 1870 both armies remained entirely free from typhus, though one might have thought *a priori* that the siege of Paris furnished just the conditions favourable to the outbreak of the disease. Enteric and dysentery, on the other hand, which have an entirely different causation, claimed innumerable victims. But this complete immunity of the two armies affords a striking proof that the disease is caused not so much by the massing together and mobilisation of large masses of men as by their continued presence in regions where the disease is either endemic or happens to be raging at the time.

Climate.—Probably there is no part of Europe in which typhus has not been observed. Some of the greatest epidemics have occurred in Italy and Spain. But it is in Great Britain, and more particularly in Ireland, that typhus in the past has had its peculiar habitat, for until the last 50 years the disease has never been absent, in the intervals of the great epidemics, to the same extent as on the continent. There is no evidence that typhus has been observed in Australia or New Zealand. There are no records of it in Africa or the tropical parts of America, and it is said to be almost unknown in India. Apart from Upper Silesia, Germany is usually quite free from the disease, but in many parts of Russia, particularly in the Baltic and Polish provinces, the disease is endemic. In Hungary, Turkey, and the adjoining oriental countries the disease never becomes quite extinct, and from Sicily and Sardinia it never disappears entirely. Though epidemics of typhus vary in severity and duration at different times and in different circumstances, there is no evidence of any change in its type or essential characteristics; the typhus of modern times is the same as that described by the Italians, Frascatorius and Cardanus, in the sixteenth century. Seasons and meteorological conditions exercise but little influence on typhus, which thus differs from most other diseases. Doubtless the disease is more prevalent during the colder season, most epidemics reaching their height in the early month of the year and subsiding again during the summer, but this is because it is during the winter that all the factors which influence the individual disposition to the disease and the transmission of the poison are specially active, such as the poverty resulting from unemployment and the overcrowding for the sake of warmth in badly ventilated houses. With the coming of the summer the poorer part of the population tends to scatter, work becomes more plentiful, and the conditions of life are generally improved.

Though sporadic cases of typhus occur from time to time in Serbia there would have been no epidemic of typhus if it had not been for the war. Serbia is, of course, a poor country, but it is not subject to failure of crops and famine, and, as a rule, the peasants have sufficient to eat. It must be remembered that Serbia went to war in the autumn of 1912 against Turkey in alliance with the other Balkan States, Montenegro, Greece, and Bulgaria. Not content with that she was again at war in the following spring with Bulgaria, which was sufficient to have impoverished a country with much greater natural resources. When typhus actually broke out early last year—there had been a few sporadic cases as early as November and December, 1914—Serbia had already been at war with Austria for five months; she had suffered a serious defeat and gained a great victory, but it was this very victory which proved her undoing from the health point of view. For it appears that the typhus epidemic took its origin among the Austrian prisoners, of whom at the end of last year Serbia had taken 67,000. The starting-point seems to have been Valjevo, a small town in the north-west of Serbia, not far from the frontier of Bosnia. When evacuated by the Serbians it had been free from disease, but on their return they found 3000 wounded

and sick Austrians, many of them suffering from typhus fever. In one building 150 dead Austrians were found in the cellars; men and cattle were buried indiscriminately. From thence the disease spread in a south-easterly direction to Kragujevatz and then to Nish, the temporary capital of Serbia, where a very large number of troops were encamped. After that it spread further south to Skoplje, in New Serbia, and to Monastir, close to the borders of Greece, and, in fact, to wherever the army might be quartered. The civil population furnished a considerable number of cases, but the soldiers were the main victims of the disease. It was difficult to find a suitable place for housing the soldiers. Possibly, if they could all have been billeted out in tents it would have been better; as it was, they were all scattered about the towns. At Skoplje the soldiers were mainly quartered in old Turkish barracks, which left much to be desired as far as sanitation was concerned, and being for the most part in enclosed parts of the town they were eminently unsuitable. The soldiers slept upon straw, which is well enough when it is changed fairly often. As a rule, they had clean straw every ten days. I do not think I ever saw it later than the seventh day, when it was not pleasant either to the sense of sight or smell. However, in many of these barracks an attempt was made at putting the blankets out in the sun, which is the best of purifiers; also in one barrack I found that carbolic had been sprinkled about, which certainly seemed very advanced. The infection was carried largely by soldiers returning home from the army and by peasants wandering about at large or travelling in the crowded trains, clad in filthy clothes, rags, and goatskins, there being no restrictions placed on railway travelling or any attempt made to disinfect the carriages at first. Later, when early in March a detachment of the Royal Army Medical Corps arrived, Colonel Hunter and Lieutenant-Colonel Stammers, in conjunction with the Parliamentary Sanitary Commission at Nish, caused quarantine stations to be established behind the various camp lines, notification of disease was enforced, infectious patients were removed from their homes to hospitals, all railway communication was stopped for a time, and all soldiers on leave were recalled so that there might be no danger of reinfecting the railway carriages after the disinfection which was carried out during the stoppage. At a hospital in Nish at one time there were 700 patients to 200 beds, with only two doctors, no sanitary arrangements, and no bathrooms.

Early in March there were 8000 cases of typhus in the army apart from the civil population, as well as an equal number of relapsing fever, and about 1500 cases of enteric fever. In Kragujevatz, a town of 20,000 inhabitants, there were 1400 cases of typhus, and the number of deaths of all sorts in three months had been 3400, or 34 times the normal. The condition of things in some of the hospitals there early in January, 1915, was appalling. Miss Fraser, of the Scottish Women's Hospital, describes the terrible hospital overcrowding, how one would find a typhus case together with a case of dysentery and of relapsing fever lying three on two mattresses and exchanging germs. There was not even sufficient food. No one washed the patients, they lay there in the weakness of fever, becoming filthier and filthier. When a man dies the next comer is put on to the same dirty mattress between the same loathsome sheets.

About the middle of January, 1915, the epidemic of typhus had reached Skoplje, which is the part of Serbia with which I am personally acquainted. So rapid were its ravages that in one week there were 400 cases in the town of Skoplje and several thousands in the compounds round about. It was here that Lady Paget's hospital, which had been sent out by the Serbian Relief Fund, made itself so particularly useful. By being able to supply new clothing, disinfection and the consequent stamping out of vermin were rendered possible; a man cannot be expected to discard even a verminous garment in winter unless he can be provided with something to replace it. The inadequate disinfecting apparatus in the town entirely failed to cope with the enormous quantities of discarded underclothing, so that the distribution of fresh supplies of clothes, while the old ones were being disinfected, became one of the most important things to be done.

If one were asked what things were most required at Skoplje in the early days of the epidemic, I should say wood and blankets. Wood is, of course, their only form of fuel, and the absolute necessity of this in the cold months of the year requires no explanation. The local authority had bought up all the wood in the vicinity with a view to distributing it, but its methods were cumbersome and unskilful, so that a good deal of avoidable distress was caused, patients not only shivering with cold, but unable to get hot food or drink owing to the scarcity of fuel. Blankets seemed always insufficient; for a time at Skoplje a fresh supply could not be obtained for love or money, and the suffering entailed by being insufficiently clad at night during the cold of an early Serbian spring can be better imagined than described. In time of war it is always the simplest and, so to speak, the most obvious things of which one stands in need. Speaking as a physician, and I believe most surgeons would agree, the number of different drugs which are really necessary in time of war is surprisingly small, though the quantities required of lint, bandages, and aseptic gauze may well be extremely large.

The typhus colony—known in Skoplje as the Sixth Reserve Hospital, which was established owing to the activity of Lady Paget in persuading the Serbian authorities of its necessity, and which till recently was in charge of Dr. Maitland—was a really splendid group of buildings, and when occasion demands it can accommodate as many as 1500 cases. It is situated about a mile and a half from the town, and is so laid out that not only is it isolated from the rest of the district, but, if cholera were to break out before typhus had quite subsided, any part of it could be cut off from any other part, so that both diseases could be dealt with there with impunity. During the months of March and April, 1915, 1800 cases passed through the hospital. At first the staff was very insufficient, as most of the English nurses were surgical, whose services were required elsewhere, so it was necessary to employ Serbian soldier orderlies and some of the Austrian prisoners

In the early days when the disease was spreading like wildfire the fever hospital could not contain a tithe of the cases sent into the two isolation wards which were set apart for the purpose. The patients were crowded together in a most unsatisfactory way, often two in a bed. The condition in which the patients arrived at this typhus hospital was most miserable. They were driven up in small open carriages provided by the Serbian administration, half unconscious, shaking with fever and often almost naked. On their arrival they were turned out of the carriage, regardless as to whether they could stand or not or if there was anyone to receive them. All that could be attempted at first was to see that every patient was thoroughly cleansed and disinfected before he was taken into the ward, his clothing being all destroyed even when there was no available clean clothing in which to put him. The important thing was to get the scheme working, however imperfectly, so as to relieve the congestion in the town. One of the great difficulties arose from the fact that patients were so often sent in from the town to the hospital without any adequate notice; on one occasion 60 patients were sent in with only three hours' notice, and on another occasion 95 were sent with only a few hours' notice. Another cause of difficulty was the unreliability of the water-supply; it was often cut off without any warning.

During the early weeks of the typhus epidemic the greater number of patients at Skoplje were Austrian prisoners. At the start, before any nursing was available, deaths took place at the rate of from 20 to 30 a day; early in May, when there was a full staff working at the hospital, on three consecutive days not a single death occurred, although there were over 500 patients. When no nursing was available the proportion of deaths amounted to 30 per cent.; with a staff of 25 it fell to 14 per cent. By May 6th the town had been entirely cleared of typhus, not a single case being recorded, though patients were still sent in from surrounding towns and villages.

The main circumstances which favour an outbreak of typhus are: (1) overcrowding; (2) physical exhaustion; and (3) ill-nourishment. The last-named is so striking a feature that the disease has been called "febris famelica," or famine fever. War usually adds itself to one or more of these factors, and in the case of Serbia they were all present. One might naturally imagine that war which is conducted in the country and open air would not be connected with overcrowding, but, as a matter of fact, in war time men are often herded together in villages, where the houses may be as insanitary and ill-ventilated as the worst slums of a great city; then, again, in time of war hospitals readily become

filthy and overcrowded, and, unless there is a highly trained organisation at work there, they easily become centres of disease and veritable plague spots. In the case of the Serbians the overcrowding was due to the very large number of prisoners thrown upon them in the winter season, at a time when there was no adequate accommodation, and consequently they had to huddle together as best they could. Then, again, with regard to nourishment, in an ordinary way Serbia is a poor country, but there is no poverty; it is a country of peasants, each with a small piece of land, from labouring on which a man can gain a livelihood with no great difficulty, but there is not much to spare; there are no great quantities of accumulated capital, practically no manufactures, even the firearms have to be imported from abroad. Consequently, after being at war three times in the space of three years, the amount of poverty and distress which was present at the end of last year may well be imagined. War broke out before the harvest had been properly gathered in, and then there had been the waste of the two preceding years, and therefore the soldiers who had to undergo such great exertions, instead of having more food had less, and after the great victory of December, 1914, there were 67,000 Austrians to be fed in addition. Food was greatly wanted by the starving peasantry, and it was fortunate that the Serbian Relief Fund, through the agency of the Paget hospital, apart from all medical assistance, was able to send large supplies of rice to some of the surrounding villages, which were most gratefully accepted. With such a low physical condition and such inadequate nourishment it is hardly surprising that typhus should have spread so rapidly and that there should also have been a great mortality. For not only did this low physical condition favour the onset of typhus, but the patients more easily passed into an asthenic condition and so died. Then, too, there was a great shortage of doctors, so that it was almost impossible at first to make the necessary arrangements of isolation and segregation, which alone can prevent the spread of the disease. At the outbreak of the war it is estimated that there were not more than 400 Serbian doctors; the mortality among them was very great, so that in July of last year there were said to be only 230; there were, therefore, not enough for the army alone, quite apart from the civil population, which was thus left almost entirely without help in medical and sanitary matters. Last July, however, there were actually working in Serbia some 12 British hospital units and as many as 420 British nurses and doctors. An International Sanitary Commission was established with its headquarters at Nish. Under it the general medical and sanitary work of the country was roughly apportioned between the different coöperating nations. France had charge of the northern half of the country and the United States of the south. Nish and the immediate neighbourhood was under the Russians. To the British had fallen the care of the army and most of the hospital work except that done by the Serbians themselves.

In the midst of war, with the enemy only separated from you by a river, it is easy to understand how difficult it is to organise on the spur of the moment an administrative scheme which could cope with the outbreak of a serious epidemic, even in time of peace it would have been difficult for the Serbians, as they had practically no sanitary arrangements and their general condition in this respect is what ours was in the eighteenth century before Chadwick and the other great sanitary reformers had arisen. Finally, we must remember that the important part of Serbia known as New Serbia had been in the hands of the Turks until three years ago and that no progress, whether physical, intellectual, or moral, has ever emanated from the Turk.

DEATH OF A CENTENARIAN.—The death occurred at Lewes on May 17th of William Hoather, aged 103. A bricklayer by calling he had resided in the Sussex county town all his life. His family is noted for longevity. A sister attained the age of 100 and a brother lived to be 90.

TUBERCULOSIS IN CORNWALL.—The tuberculosis officer for Cornwall (Dr. C. Roper) in his annual report for 1915 alludes to the fact that Cornwall is heavily infected with tuberculosis. He states that in Cornwall, on Oct 1st, 1915, there were 86,681 persons insured under the National Insurance Act, and in December, 1915, 310 (or 3·576 per 1000) were receiving domiciliary treatment, whereas in Dorset, Hampshire, and Wiltshire, with 289,408 insured persons only 296, or 1·02 per 1000, were receiving domiciliary treatment.

ARRANGEMENTS FOR THE CARE OF CASES OF NERVOUS AND MENTAL SHOCK COMING FROM OVERSEAS.

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IN view of the widespread interest taken in the soldiers sent home from the British armies overseas who are suffering from nervous shock, neurasthenia, and mental breakdown, the Director-General has permitted me to contribute the following information upon the arrangements provided in this country for the care and treatment of these cases.

Cases of nervous and mental breakdown due to shock, fatigue, exposure, and the other conditions incidental to a campaign began to arrive in England in September, 1914, shortly after the commencement of hostilities. The cases showed a varied symptomatology, but could be classified into three main groups. One group was recognised whose symptoms were due to the bursting of high-explosive shells in the immediate vicinity of the patient or to the secondary effects of the explosion, such as burial under earth and débris or the inhalation of noxious gases. The second group included cases of a general neurasthenic character (using this term in its widest sense) attributable to exhaustion of the nervous system resulting from physical and nervous strain, sleeplessness, fear, anxiety, and harassing sights and experiences. The third group included cases of mental breakdown—the milder as well as the more severe psychoses—mental confusion, mania, melancholia, and delusional and hallucinatory psychoses.

At the commencement of the war the cases of nervous shock and neurasthenia were transferred from overseas in company with medical and surgical cases, and were treated in the general wards of the hospitals at which they arrived, while the cases of mental disorder were transferred to D Block, Netley, the established institution for the treatment of mental patients in the service of the army.

As cases of nervous breakdown of all kinds were coming over in considerable numbers in consequence of the severe fighting during October and November, 1914, and as it was deemed desirable that special provision should be made for their treatment, Sir Alfred Keogh commissioned a special medical officer to proceed to France to report upon the cases—their nature and numbers and the conditions under which their treatment should be carried out to the best advantage both during the preliminary stages in France and afterwards on their arrival in this country. The general purport of the report was to the effect that the cases of nervous shock and neurasthenia should be given treatment in hospitals for nervous diseases and in special institutions provided for the purpose, under the care of physicians with special neurological knowledge. In consequence, arrangements were made whereby cases of neurasthenia and nervous breakdown were labelled on their departure from the base hospitals by medical officers with special qualifications for this work, and were transferred directly to the special hospitals and institutions provided for their treatment at home. By these means cases of functional paralysis, neurasthenia, and the milder psychoses were separated as early as possible from cases of severe mental disorder.

The special institutions were the hospitals for nervous diseases and the Red Cross Military Hospital, Maghull. This institution, which was built to meet the requirements of the Mental Deficiency Act, was handed over to the War Office in December, 1914, as it was necessary to have a hospital suitable for those "borderline" cases which required more special supervision than could be given in hospitals. It was desirable also to provide an institution to which mental cases might be sent from D Block in order to obviate their transference to public asylums—a policy which was adopted in view of the special circumstances attending the cause of the disorders. The Military Hospital, Maghull, being built upon the villa pattern, provided the requirements of these cases. To meet the increasing number of cases further institutions were added at later dates to those just mentioned—viz., the Springfield War Hospital for severe and protracted cases of neurasthenia and "borderline" cases, and the Napsbury War Hospital for cases of acute mental disorder requiring asylum care and supervision.

In order that all cases should receive a short period of rest and treatment on their return from France before being transferred to the most suitable institution for final disposal and treatment, two "clearing" hospitals were established early in 1915. These were:—

1. *The Neurological Section, 4th London Territorial General Hospital.*—All neurological [1] cases labelled as such at the British base hospitals overseas were transferred to this section. There they received a short probationary course of treatment, with the result that a large number recovered rapidly and in due course were returned for light duty. A certain number, however, were of a more serious and protracted character. These were transferred eventually to one of the hospitals provided for the purpose—viz., the Maghull or the Springfield War Hospitals. In the event of a patient becoming insane, he was transferred to D Block, Netley, or to the Napsbury War Hospital.

2. *D Block, Netley.*—All cases of acute mental disorder arising in soldiers overseas were transferred to this section. After a short period for observation and discriminatory sifting, the cases were transferred, on the one hand, to Napsbury War Hospital should they be considered of a certifiable character and to require care and treatment under asylum conditions; on the other hand, to the Maghull or Springfield War Hospitals if of a non-certifiable character but requiring more care and supervision than could be obtained in a general hospital.

The foregoing is a brief review of the provision for the cases of nervous and mental breakdown up to May, 1915. For some time before this date it had been noticed that a considerable number of neurological cases were coming from overseas directly into Central and Auxiliary Military Hospitals scattered throughout the country. Partly in order to meet the needs of these cases and partly in order to provide additional accommodation for the increasing number of cases, the Director-General established Neurological Sections in all the Territorial General Hospitals throughout England, Scotland, and Wales (May 24th, 1915). These sections were officered where possible by physicians specially versed in nervous diseases. The primary object of these sections was to furnish the same probationary course of treatment to the cases on arrival at the Territorial General Hospitals as was given in the clearing hospitals and to bring in all cases from the auxiliary hospitals in which suitable or sufficient treatment was not available. Moreover, cases of a serious or protracted nature or cases requiring supervision of a special character could be transferred from them to the Maghull or Springfield War Hospitals.

With the introduction of Neurological Sections into the Scottish General Territorial Hospitals it was considered advisable that a special hospital should be provided in Scotland. Through the assistance of the Scottish branch of the Red Cross this was forthcoming in the Royal Victoria Hospital, Edinburgh, which has continued to provide accommodation for cases of a neurological character.

At the same time a Neurological Section was formed in the main Hospital Building, Netley, the chief object of which was to permit the removal from the convoys arriving at D block from overseas of all cases which the medical officers there considered did not require supervision of a special kind, as some cases had so far recovered on arrival at Netley as to be deemed suitable for treatment in a Neurological rather than in a Mental Section.

In order to understand fully the arrangements existing at the present time for the care and treatment of unwounded soldiers suffering from nervous shock, neurasthenia, and mental disorder let us follow from overseas two or three hypothetical patients to their final destination in this country.

On arrival at one of the British base hospitals abroad the soldier's condition is investigated by a special medical officer. The patient then is sent to a section of a hospital according as his symptoms are of a neurological or a mental character. Should he be suffering from transitory mental symptoms, which subside rapidly, he is transferred from the Mental to the Neurological Section as soon as it is advisable to do so. In order to meet this class of case special accommodation is now being provided at the base hospitals overseas, so that the patient may be placed under the most suitable circumstances for rapid recovery. The patients are labelled for transference to one of the clearing hospitals at home; if neurological to the 4th London Territorial General Hospital, or the Neurological Section, R.V.H., Netley; if mental to D Block, Netley.

[1] The term "neurological" is used in this paper to refer to *unwounded* cases suffering from neurasthenia, the functional paralyses, hysteria, and the milder psychoses.

Neurological Cases.

On arrival at one of the clearing hospitals just mentioned, or at a Neurological Section in any Territorial General Hospital, the patient is given treatment. If his symptoms are slight or transitory and disappear rapidly, he is sent on furlough and later is returned to light duty. On the other hand, should the course of the disorder be less favourable, or should symptoms develop which require special supervision, or if it is the opinion of the medical officers that the case is likely to be protracted, or to require special treatment not available in the section, the patient may be transferred to one of the special hospitals for nervous diseases or to a special institution: (*a*) To the Military Hospital, Maghull, for the Northern and Western Commands; (*b*) to the Springfield War Hospital for the Eastern, Southern, and Aldershot Commands; and (*c*) to the Royal Victoria Hospital, Edinburgh, for the Scottish Command. If the patient is under treatment at one of the hospitals in the Irish Command, he may be transferred to the King George V. Hospital, Dublin.

If for various reasons it has not been possible to send patients home through the clearing hospitals so that they arrive directly from overseas at Central or Auxiliary Military Hospitals, in which there is no Neurological Section, or to which no medical officer with special experience is attached, a short period of treatment is given, but should recovery not take place within two or three weeks the patient is transferred for treatment to the Neurological Section of the nearest Territorial General Hospital.

From the preceding account it is evident that every case of nervous shock and neurasthenia coming from overseas is given a short period of rest and treatment in the hospital at home at which he arrives. In many instances this period is sufficient to permit of recovery. In other cases sufficient opportunity is provided to study the symptoms with a view to the transference of the patient to one of the special institutions should this further step be necessary.

Mental Cases.

On arrival from overseas at D Block, Netley, the patients are examined by the special medical officers attached to the hospital. All cases which are considered to be of a neurological character are removed for treatment to the Neurological Section in the main Hospital Building, Netley. All patients suffering from the severer psychoses of a certifiable type are given two or three weeks' probationary treatment in D Block. If no recovery has taken place during this time they are transferred to the Napsbury War Hospital, or to the Dykebar War Hospital, Paisley, if their domicile is in Scotland or if they belong to Scottish regiments.

No mental cases are transferred directly to Ireland, but special arrangements have been made recently by which overseas cases of mental disorder arriving in Ireland may be treated in a villa attached to the Richmond District Asylum.

The number of cases which recover during their stay in D Block and are returned to light duty is negligible, but a certain number recover sufficiently during their stay there to be no longer considered of a certifiable character. These latter are transferred to the Red Cross Military Hospital, Maghull, or the Springfield War Hospital for further observation and treatment.

A short account may be given of the institutions to which reference has been made, the general character of the cases retained for treatment, and the percentage of cases returned to light duty.

1. *The Neurological Sections at the 4th London Territorial General Hospital, and Royal Victoria Hospital, Netley.*—The Neurological Section of the 4th London General Hospital is the largest of the Neurological Sections, and in addition to receiving the majority of the neurological cases sent home directly from overseas, it accepts patients transferred from Central and Auxiliary Military Hospitals in the London district and adjoining counties. It contains 400 beds. An important division of the section is the Maudsley Hospital which is especially well adapted for the care and treatment of soldiers suffering from all forms of traumatic neurasthenia, hysteria, and the milder psychoses.

The Neurological Section of the Royal Victoria Hospital, Netley, occupies several wards in the main Hospital Building and consists of about 100 beds. It serves a most useful purpose in taking over for treatment cases which have been

sent from overseas to D Block, but which require no longer the special supervision provided there. Cases are sent also directly to the section from overseas.

The type of case observed and treated in these sections is similar. They are: Most forms of functional paralysis, especially paraplegia, disturbances of speech and articulation, amnesia or loss of memory, the effects of terrifying dreams, mutism, deafness, deaf-mutism, amblyopia, "bent-back," tremblings and motor agitations, tic-like movements, sleeplessness, nervous debility, indecision, loss of self-confidence, and the milder forms of neurasthenia, simple mental confusion, the anxiety psycho-neuroses, and simple mental depression.

The treatment adopted consists chiefly of rest and feeding; massage and electrical applications in suitable cases; baths when these seem indicated; and psychotherapy in the form of simple suggestion and occasional hypnosis.

In a general way the results of treatment at the Fourth London General Hospital show 40 per cent. of cases returned to light duty, 20 per cent. invalided, and 20 per cent. transferred for further treatment to the special institutions.

2. *The Special Institutions—the Red Cross Military Hospital, Maghull, and the Springfield War Hospital.*—Both these hospitals are constructed on somewhat similar lines in that they are provided with single rooms and special accommodation for cases requiring isolation and supervision in addition to day rooms and dormitories. The Maghull Military Hospital had not been used for the treatment of patients before it was taken over by the War Office, but the Springfield War Hospital had been employed as a hospital for defective children for about ten years.

The available accommodation in the two hospitals amounts to about 550 beds. No case is admitted directly from overseas to either of these institutions, as all cases have received a course of treatment at one of the Military Hospitals at home before transference. The patients most suitable for treatment in these institutions are cases of neurasthenia of a severe or protracted character, the milder psychoses, such as simple melancholia and the anxiety psychoses, psychoses with obsessions and fears, profound amnesia, epilepsy, high-grade mental defectives, the milder types of primary dementia, and all cases of a functional character which do not lend themselves to treatment in a general hospital.

Treatment is conducted upon general lines, rest, feeding, indoor and out-door recreation, and massage in suitable cases. At the Maghull Military Hospital a form of psycho-analysis has been used with benefit in selected cases. The results of treatment at Maghull show about 40 per cent. of cases returned to light duty.

3. *The Mental Hospitals—Napsbury War Hospital and Dykebar War Hospital, N.B.*—These hospitals receive the majority of their patients from D Block, Netley; but Napsbury admits mental cases also from military hospitals in the Southern Command and the Midland counties; Dykebar admits also from military hospitals in the Scottish Command and the northern counties. The Napsbury War Hospital is the hospital section of the parent asylum; Dykebar is one of the most recent of the Scottish asylums built upon the villa pattern. The available accommodation in the two hospitals is about 700 beds.

The patients transferred to these hospitals are of a certifiable type and include most of the severe forms of acute mental disorder—the confusional psychoses, mania, the graver melancholias, acute delusional and hallucinatory psychoses, dementia præcox, mental deficiency with confusion, general paralysis of the insane, and epilepsy with mental symptoms. In accordance with accepted policy, none of the patients in these hospitals is certified as a person of unsound mind. Each patient is given a reasonable period of treatment with a view to recovery. In consequence, however, of the accumulation of chronic and incurable cases which was observed a few months ago, it was decided to board and discharge to asylums all cases of general paralysis of the insane, of epilepsy with insanity, and all patients who had been in asylums prior to enlistment. A certain number of chronic cases also are boarded and discharged to asylums if no improvement is recorded after a fair and reasonable period of observation and treatment.

It is obvious from the nature of the disorders that the percentage of cases returned to light duty must be small, but the figures from the Napsbury War Hospital show from 10 to 15 per cent. of cases discharged to light duty.

CONGESTION IN THE TREATMENT OF CASES OF EPIDEMIC CEREBRO-SPINAL MENINGITIS.

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THE treatment advocated in this short paper is simple and does not interfere with concurrent treatment. Congestion of the cerebral vessels is brought about by raising the foot of the bed not simply on the usual ward blocks, but on stools or lockers, so that the bed and the patient's body, no pillow being allowed, make an angle of from 14° to 23° with the floor. That the method influences the course of the disease profoundly will be gathered from a study of the five cases reported.

Everyone who has treated this disease can call to mind cases which seemed to all but get over the illness, but became chronic and died. It was in this type of case that treatment by congestion was at first tried, later congestion was found useful in the earlier stages of the disease. The histories of the first five cases treated are given in detail.

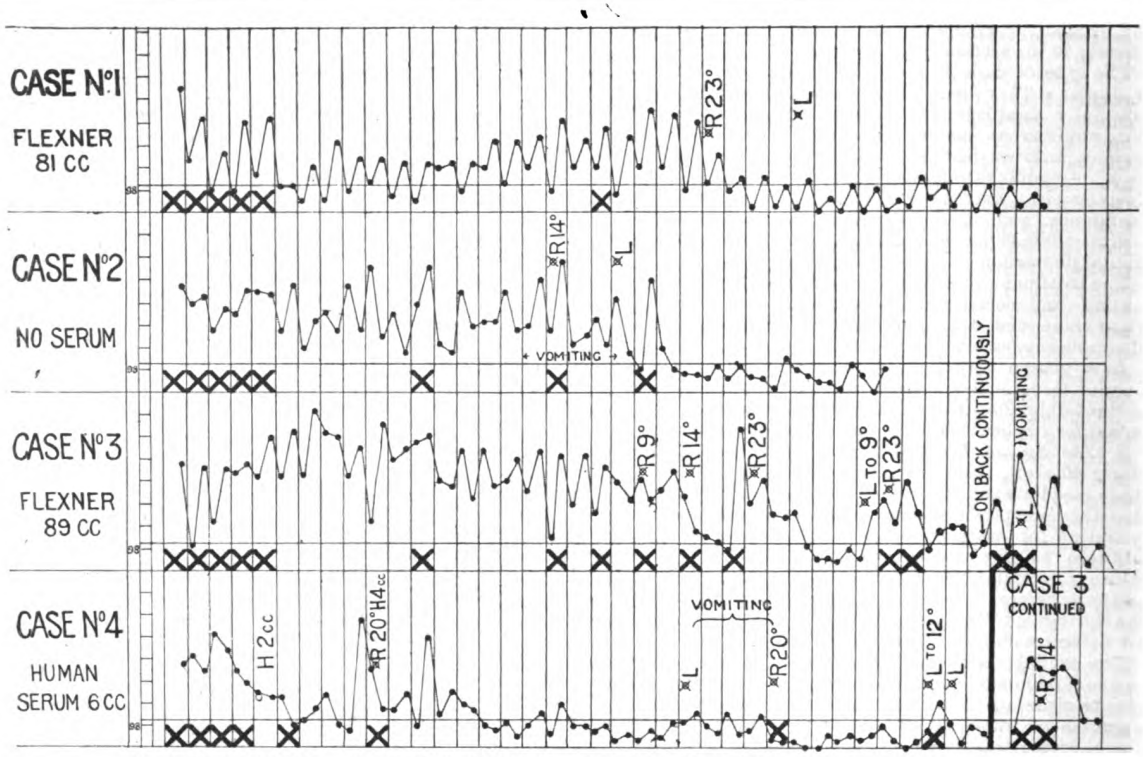
CASE 1.—Male, aged 20. The patient suffered from a mild attack of the disease and recovered some degree of forward movement of the head. Unfortunately, although he felt well, a slight stiffness of the neck persisted, his temperature was irregular, and leucocytes, chiefly lymphocytes, were present in a clear spinal fluid containing 0·1 per cent. of albumin. On the twenty-seventh day of illness, at 11 A.M. (see Chart), the lower end of the bed was raised on lockers (angle 23°). In the evening of the same day the temperature rose only to 99·6° F. and thereafter remained normal. The bed was lowered four days after the temperature had fallen to normal.

Summary.—A mild case with immediate fall of temperature and complete recovery following the raising of the foot of the bed.

CASE 2.—Male, aged 20. The patient on the eighteenth day of illness vomited, his head was retracted, and he had every appearance of becoming a chronic case (see Chart). On puncture on the nineteenth day the pressure was found to be low. The foot of the bed was raised on stools (angle 14°). There was occasional vomiting until the twenty-second day, when the patient complained of very severe headache and the bed was lowered. On the twenty-third day on puncture a hazy fluid at high pressure was withdrawn. On the twenty-fourth day the patient felt quite well, and the temperature fell to normal. On the twenty-fifth day his head was freely movable. Thereafter his recovery was uninterrupted.

Summary.—Case becoming chronic, spinal fluid at low pressure, foot of bed raised to angle of 14°; after three days congestion caused severe headache, accompanied by high pressure of the spinal fluid. On lowering of bed a rapid recovery.

CASE 3.—Male, aged 21. After three weeks' illness the patient continued to have marked neck stiffness and temperature (see Chart), and there was no diminution in the number of the diplococci in the spinal fluid. On the twenty-third day of illness the foot of the bed was raised on blocks (angle 9°). No improvement followed, so the bed was raised on stools (angle 14°) on the twenty-fifth day. The temperature fell the same evening, but there was still neck stiffness. On the twenty-seventh day, the temperature again having risen, the bed was further raised on lockers (angle 23°). The temperature gradually fell and was normal on the thirtieth day. On the thirty-first day the patient felt well and his head was freely movable. As the patient continued to feel well his bed was unfortunately lowered to blocks (angle 9°) on the thirty-third day at 10 A.M. In the evening of the same day the temperature rose to 102° F., and he had a slight headache. On the thirty-fourth day his bed was again raised on lockers. By the thirty-eighth day the temperature was normal, the patient felt well, but some stiffness of the neck remained. As the slowness of cure was attributed to the patient raising his head and lying on his side he was restrained from doing anything except lying on his back from the evening of the thirty-eighth day. His temperature rose on the following day, and on the fortieth day reached 102·2° at 6 A.M. Vomiting began at 3 A.M. on the same day, and as he could retain nothing his bed was lowered at 9 A.M. The vomiting ceased at 4 P.M. On the forty-second day the temperature was normal, and he felt well on the forty-third day, but some slight neck stiffness persisted. On the evening of the forty-fourth day, apparently



R-BED RAISED. L-BED, LOWERED. H-HUMAN SERUM. X-PUNCTURE.

following puncture early on the same day, the temperature rose to 101·6°, and there were headache, backache, and later vomiting. On the forty-fifth day his bed was raised to 14°. By the forty-seventh day his temperature had reached normal. His bed was gradually lowered from the fifty-fifth day and the patient has remained well.

Summary.—No improvement following a slight raising of the foot of the bed, free movement of the head and a normal temperature following the raising of the bed on lockers. A relapse immediately after the too early lowering of the bed. Some improvement follows a partial application of the treatment, with a marked reaction following its stringent application; this too great congestion is followed by a rapid improvement on the lowering of the bed. A relapse follows puncture. Final recovery after a prolonged raising of the foot of the bed to angle of 14°.

CASE 4. — Male infant, aged 7 months. This was a peculiarly interesting case. Puncture alone was tried, as indicated on the chart. The spinal fluid contained large numbers of organisms, both intra- and extra-cellular. As a last resort, on the morning of the sixteenth day of illness 2 c.c. of the serum[1] of a convalescent patient were injected intrathecally. The effect was astonishing, as the infant, who had required nasal feeding, resumed taking the bottle in the afternoon and seemed much better. The temperature gradually fell and was normal on the evening of the eighteenth day. The fluid at that time was hazy and showed few diplococci as compared with the large number previously present. Unfortunately the child became worse, his colour again became bad on the nineteenth day, and he vomited. He became progressively worse until the twenty-second day of illness, when a further 4 c.c. of the serum of the same convalescent was given and the cot was left raised at an angle of 20°. On the twenty-third and twenty-fourth days there was vomiting, but on the twenty-sixth day he seemed better, and on the twenty-seventh day had a normal temperature. The child remaining quite well the cot was lowered on the thirty-sixth day at 10 A.M. At 2.30 P.M. there was vomiting. Thereafter the patient became fretful and vomited two or three times a day up to the fortieth day, when he was punctured and showed a clear fluid containing a few lymphocytes. The cot was again raised to an angle of 20° and he almost at once seemed to be better and comfortable. There was no further vomiting. The fluid being normal, the bed was lowered to blocks on the forty-seventh day, and finally lowered altogether on the forty-eighth day. The recovery was uninterrupted.

[1] The injection of 10 c.c. of human anti-serum in a later case was followed by shock and all the symptoms of anaphylaxis. The patient's condition was rendered much worse.

Summary.—A marked reduction in the number of organisms following the intrathecal injection of the serum of a convalescent. The number of organisms remain scanty but the child becomes worse. A further injection of human serum, and the end of the cot left raised is followed by a normal temperature. The lowering of the cot later leads to fretfulness and vomiting; these at once stop when the cot is again raised. Eight days later the cot is lowered and the child remains well.

CASE 5.—Male, aged 22. This patient was admitted on the second day of illness with a normal temperature. The upper end of the bed was raised to an angle of 14°. During the next few days, although the temperature remained normal and the headache became less severe, the neck was stiffer and retraction of the head developed. On the fifth day the lower end of the bed was raised to 14°. In the evening the temperature, which had remained normal, rose to 99° F. Improvement set in and continued thereafter.

Summary.—A subacute case with rise of temperature and cure following the raising of the lower end of the bed.

From a consideration of these and further cases we feel sure that the method deserves a further and more extended trial. It would appear that continued raising of the foot of the bed leads to congestion of the cerebral vessels. In mild cases in a few days a normal temperature and free movement of the head result, and the recovery is uninterrupted. In more severe cases the temperature rises and the patient more gradually recovers, the recovery being at first accompanied either or both by increased tension of cerebro-spinal fluid and a greater migration of polymorphs. If the foot of the bed has been raised too high there may be very severe headache and persistent vomiting due to a too great congestion and its results. In such cases, if the bed is lowered and the tension is relieved by puncture, the patient gradually recovers. As different cases require varying degrees of stimulation, no hard-and-fast rule can be laid down as to the height to which the foot of the bed should be raised.

Although at first this method of treatment was only tried in cases which threatened to become chronic, we recently have had good results from its application in the early stages of the disease. On admission the last two cases, after being punctured, were given morphia and the lower ends of the beds were raised on lockers during the day, being lowered or partially lowered at night. One of the patients who was admitted violently delirious recovered free movement of the neck in three days, the other, a serum-treated

case, is still ill. Whilst experience may show that it is best to raise the foot of the bed on lockers early in the disease, in more chronic cases the bed should be raised first on blocks and rapidly higher until the patient begins to show a marked reaction or a more freely movable neck. At that point heightening should stop and the patient be allowed gradually to recover, the foot of the bed being left continuously raised until some seven days after apparent recovery, and thereafter gradually lowered. Other points worthy of note are that patients should lie on their backs as much as possible during treatment, and should have no pillows. When there is marked retraction and the patient cannot lie on his back the bed should be tipped sideways and the patient's head be allowed to hang over the lower edge. This method is particularly useful for children, but as it is somewhat drastic it has not been practised for more than two hours at a time. It is always a serious mistake to puncture a patient who is progressing towards recovery, or who has apparently recovered.

This paper is in the nature of a preliminary note; its object is not only to bring to the notice of the profession a valuable method of treatment, but also to enlist its aid in finding out how the method can most usefully be applied in practice.

THE TREATMENT OF GUNSHOT WOUNDS BY PACKING WITH SALT SACS.

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THE treatment of septic wounds by a pack which is allowed to remain in the wound for several days is so opposed to the usual teachings of surgery that at first sight its utility may be doubted. Nevertheless, such treatment has proved one of the most effective methods of dealing with septic wounds during the present war. It has also been found to be one of the most generally applicable procedures for the treatment of secondary hæmorrhage. It possesses the great advantage of simplicity, an important factor when large numbers of cases require the attention of a limited staff. It also allows transport to be undertaken without any anxiety regarding the dressing of the wound.

When it is necessary to drain a wound cavity, three methods are available. The ideal method would be to expose the whole of the interior of the wound so that its walls become exposed and more or less flat. There are anatomical and surgical objections to this as a rule, but it is occasionally employed, for example, when a rectal fistula is slit up, when an amputation is performed by the guillotine method, and in certain cases of excision of wounds. Very inferior to this ideal method is the drainage of every pocket and cavity of a wound by drains. The interior of the wound is often very irregular, and it is sometimes impossible to ensure that every pocket is drained. The third method, treatment by solid salt, imitates the first or open method, by draining every portion of the surface of the interior.

The treatment of septic wounds must fulfil certain requirements. The infecting microbes must be removed by some form of lavage. The outflow of lymph must be increased. The bacterial growth must be repressed and the coagulation of the discharge must be prevented. The tissues of the wound must not be damaged either by chemical or mechanical measures. It is common ground that free exposure of the infected tissues must be made in order that adequate drainage be obtained, but many opinions are held as to the correct method of dressing the wound. These requirements may be met by the use of hypertonic solution of common salt.

It can be demonstrated experimentally that the higher the concentration of salt the greater will be its power of attracting water and albuminous substances. The "drawing" power of salt has been known for many years. Sir A. E. Wright's original lymphagogic solution consisted of a 5 per cent. solution of common salt mixed with 0·5 per cent. solution of sodium citrate. Early in the present war Sir A. E. Wright recommended the hypertonic solution of salt for the purpose of lavage and repression of the bacterial organisms of septic wounds. Colonel C. B. Lawson invented tablets of compressed salt which he placed in the lumen of drainage-tubes. Colonel Gray, C.B., originated a modification of Sir A. E. Wright's hypertonic treatment by introducing the use of solid salt in the form of tablets. The tablets wrapped in gauze formed a solution of salt.

Packing wounds with gauze impregnated with concentrated salt solution must not be confused with the plugging of wounds with ordinary dressings. Wound cavities are only potential spaces, and in order to drain them the walls must be kept apart. Ordinary drainage-tubes rarely drain every recess, and elaborate methods are required to obtain drainage from every portion of the walls and avoid the shutting off of pockets. A wound cavity filled with gauze and salt may be considered as effectively drained as if the cavity were inverted and the walls dressed as a surface wound. Every portion of the surface area is drained by the osmotic action of the salt, and the capillary action of the gauze and bandage is continually removing the discharge and producing a continuous and automatic drainage and lavage of every portion of the interior of the wound.

The tablets of salt must not come in contact with the tissue or sloughing will often ensue. The wall of the cavity must be well protected by gauze. The solid salt sac is an improvement upon the tablets. It consists of a two-walled sac of suitable size made of bandage, between the layers of which four layers of gauze are placed. The interior of the sac is filled with salt and the tail of the bandage forms a drain.

The sac is made by laying a strip of open woven bandage about a foot in length flat on the table. On this strip four layers of gauze are placed the same width as the bandage but about 4 inches in length. On top of the gauze another strip of bandage is placed. The sides of the bandage strips are then brought together by doubling the bandage in its long diameter and sewing to form a sac. The sac is filled with salt, a few stitches are put in to close the mouth. These sacs are made in several sizes, sterilised in an autoclave, and stored ready for use. One or more of them are used to pack the wound, the intervals between the sacs being filled with gauze. A tube of perforated zinc or rubber may be passed into the depth of the wound in cases of large septic wounds. Long slender sacs are made to fill bullet tracks. Small sacs are made for draining tracks in the brain. The free end of the sac is passed into a vessel containing saline solution and the wound then drains by capillary attraction. A fine rubber tube may be run in along each sac, and drip irrigation carried out if required. The salt remains undissolved for several days and when the sacs are removed from a wound at the end of a week undissolved salt still remains.

The frequency with which wounds are dressed very often depends upon empirical convention rather than on a scientific or clinical reason. Wounds are often dressed without any clear idea of the reason for removing the dressings. A dressing sticking to a wound is frequently torn off, tearing delicate granulation tissue, undoing the healing of the wound, and exposing raw surfaces for septic absorption. A more unscientific treatment cannot be imagined. In some cases it is said, the wound is dressed in order to remove the discharge. This is simply an admission that the dressing has been acting like a cork in a bottle. A rise of temperature is another reason given for removing a dressing, but if the wound is being properly treated, changing the dressing will not lower the temperature.

There are two ways of dressing a wound so that no harm is done by the changing of dressing: one is to keep a light dressing continually moist so that its removal is not felt by the patient and no tissue is damaged; the other is to leave the dressing until it is quite moist and can be removed without pain. The dressing of deep wounds is too often merely a ritual, the dressings and drainage-tubes are removed and replaced by clean ones, but the complicated series of recesses which make up the interior of most wounds cannot be reached. They may be reached by irrigation, but some portion of the wound will escape the distending effect of a drainage-tube, and the walls will fall together and a pocket will result.

The effect of the salt sac is to form a concentrated solution of salt which promotes the resolution of inflammatory induration and aids the separation of dead tissue by solution of coagulated lymph. A powerful outgoing stream of healthy lymph is produced which carries microbes and débris out of the wound and retards the bacterial growth within it. It is unnecessary and undesirable to continue the action of this hypertonic solution of salt once the wound becomes clean. If the wound is clean the sacs are removed

in from five to ten days and treatment by normal saline instituted. If the wound is foul it is either again packed with salt sacs or dressed every 48 hours with gauze soaked with 20 per cent. salt solution. When the patient's temperature remains high and his general condition is unsatisfactory it is fair to assume that a streptococcus is present. The presence of healthy lymph induced by the salt sacs does not aid in dealing with the streptococcus, but it appears probable that the most effective defence the body possesses against this organism is the white blood corpuscle. When normal saline is used the wound, hitherto bright red, becomes covered with a grey film. This is caused by the protective layer of leucocytes which act as a barrier against further invasion until the healing is completed by the ingrowth of epithelium. The hypertonic solution is therefore changed to normal saline when streptococcal infection appears probable.

The advantages of a dressing which does not require attention for seven or eight days will be obvious. The patient is saved the pain and inconvenience of frequent dressing, there is a diminished risk of secondary infection, and there is an enormous saving in material. The salt sacs have been found useful in many special instances. They were first devised for the drainage of septic wounds of the brain. Exceedingly septic wounds of the orbit with destruction to the eye have been treated by salt sacs after removing the orbital contents and removal of loose septic fragments from the bony wall of the orbit, with uniformly satisfactory results. Cases of secondary hæmorrhage associated with septic comminuted fractures of the upper part of the shaft of the femur have been packed with salt sacs. No recurrence of hæmorrhage took place and when the sacs were removed eight days later, a clean granulating wound remained. The removal of a septic foreign body, whether bullet, shell fragment, or shrapnel, is only the beginning of treatment; a septic cavity and track remain which may prove very difficult to drain and dress effectively. It has become our routine treatment simply to wash out the cavity and pack with salt sacs. The soft nature of the sacs, if they are dipped into water before insertion, makes it very easy completely to pack a cavity. The sacs accommodate themselves to the size and shape of a cavity and it is rarely necessary to add gauze to the packing. Large septic cavities associated with fracture require a drainage-tube to be inserted among the salt sacs.

The dressings become somewhat offensive at the end of a week, but the odour appears to be quite harmless. The addition of the powder eupad (hypochlorous acid) to the sacs would obviate the smell, but if the smell of the drainage causes the patient to be given what is practically open-air treatment its inconvenience will be more than compensated for.

I think it will be admitted that a method of treatment which saves the patient the pain and inconvenience of frequent dressing, which forms an efficient method of preventing hæmorrhage, and saves an enormous amount of labour and material is a good method provided its results are equal in all respects to other methods of treatment. I consider that the results are not only equal to but better than any other known method, provided the technique is properly carried out. It appears rational to add an antiseptic to the salt in foul cases, and eupad appears to be the most useful. Its addition certainly appears to do no harm in my experience, and my only reason for not using it as a routine treatment is that the plain salt gives such excellent results that it appears unnecessary. The offensive odour of the wound may in a great measure be obviated by its use. Sacs filled with eupad and salt in the proportion of one to three are destroyed in the autoclave owing to the corrosive action of the hypochlorous acid upon the fabric. A convenient method of combining the eupad with salt is to pack the wound with ordinary salt sacs sterilised in the autoclave and introduce into the middle of the sacs, without touching the wound, an unsterilised sac filled with eupad.

Six days may be said to be an average time for the sacs to remain in the wound. The temperature usually falls to normal within that period, and a rise of temperature is apt to follow dressing the wound. This rise of temperature can usually be avoided by irrigating the wound for some hours before removing the salt sacs.

The successful results of this treatment largely depend, as all treatment of septic wounds must, upon an early campaign against the sepsis and upon the thoroughness with which it is possible to remove septic and necrosed tissue.

THE ANATOMICAL POSITION OF LOCALISED FOREIGN BODIES.

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THE localisation of foreign bodies in the tissues has become a subject of the greatest importance during the present war. All kinds of improvements in detail and technique and all forms of new and elaborate apparatus have been evolved in order to produce greater accuracy in exact localisation. The result has been little short of marvellous. Given the exact position of the foreign body and its depth in the tissues, it has become comparatively easy for the surgeon to remove it with a minimum of injury to the surrounding parts and with a great reduction in the time of operation and a much smaller amount of shock to the patient. There are, however, many cases that present considerable difficulties to the surgeon even after localisation. Radiographers report that a foreign body lies at a stated depth below a certain point. The difficulty the surgeon frequently experiences is as to the anatomical position in which a certain depth will lead him. It has hitherto not been usual for the surgeon to think out his operation in inches or centimetres from the surface of the skin. He has never calculated the depth from the skin to the various underlying tissues. And if he is not assisted on this point by the radiographer his operation is sometimes not certain in its results. For instance, if a radiographer reports that a foreign body lies 9 cm. deep from a mark on the front of the thigh over the great trochanter, the surgeon wants to know if that depth is in front of or behind the great trochanter. If he knows that the average depth from the skin to the great trochanter anteriorly is 10·8 cm. and from the back 9 cm., he would be most probably accurate if he concluded that the foreign body lay just in front of the trochanter. If the foreign body were localised as 5 cm. from the skin of the back over the transverse process of the twelfth dorsal vertebra, where would the foreign body lie? In front of the transverse process or behind it? As the distance from the skin to the transverse process of the twelfth dorsal averages rather under 4 cm., the foreign body would be found in, or just anterior to, the transverse process.

The criticism of deductions of this character is, of course, that individuals vary enormously in thickness of structure. Fat, muscular tissues, and even the bones are of very different thicknesses in different individuals. There is, however, remarkable uniformity in a large number of soldiers who undergo operation in regard to these details. We must not forget that they are men taken after medical examination, largely of an average type, and after a campaign greatly standardised in bodily averages. And even in the abnormally thin or the abnormally fat a general knowledge of the average position is of great help in coming to a conclusion as to the foreign body's anatomical position.

The details we can give in this paper are only of a preliminary character. We give only some of the important positions, and especially those that have presented themselves practically to us in the routine work of military radiography. Later it may be possible to present a more comprehensive and detailed list of positions when localised. And we hope that radiographers generally will work at the subject, and by a consensus of investigation obtain further and more accurate details than we are able at present to show.

The following results have been arrived at with the use of a long needle on a handle and measuring the depth inserted when the bony point under investigation is reached. This method was supplemented by taking a double image of the various regions on one plate and estimating the depths of the bony points as for a foreign body. No attempt has been made to give positions in the leg or arm. These parts are comparatively thin, and can easily be transferred from an antero-posterior to a lateral position and foreign bodies can quickly be found. The chest, the abdomen, the pelvis, and hips are the parts presenting difficulties to the radiographer and surgeon. In the following table the results are given for the various parts examined.

INCISION.	DEPTH OF ANATOMICAL POSITION.
Head: Laterally.	
Just above zygoma.	1 in. to sphenosquamosal suture.
Just below zygoma.	1½ in. to sphenoidal bone.
To coronoid process or condyle of mandible.	1 in.
Neck: Antero-posteriorly.	
Through centre of larynx.	2 in. to body of vertebra.
1¼ in. to side of centre of larynx.	1½ in. to transverse process of cervical vertebra.
Ditto.	3 in. total depth of neck.
Through middle line of trachea just below cricoid.	1½ in. to body of vertebra.
1¼ in. to side of centre of trachea.	1½ in. to transverse process of vertebra.
From centre of suprasternal notch.	1¼ in. to posterior border of manubrium.
Neck: Laterally.	
From centre of middle of neck.	1½ in. to transverse process of vertebra.
Ditto.	2¼ in. to body of vertebra.
From just below tip of mastoid process.	2¼ in. to body of 1st cervical.
Chest: Superiorly.	
From a point midway between root of neck and tip of acromion.	2 in. to apex of pleura, downwards.
From a point midway between internal and external extremities and just behind posterior border of the clavicle.	2 in. to apex of pleura, downwards.
Chest: Anteriorly.	
From centre of lower border of clavicle backwards to subscapular fossa just clear of ribs.	3 in.
From a point just over tip of coracoid to subscapular fossa backwards.	3 in.
From a point 1 in. external to sterno-clavicular joint just below clavicle.	1½ in. to 1st rib.
Ditto.	¾ in. to pleura.
From a point 2 in. external to sterno-clavicular joint just below clavicle backwards.	1¼ in. to 1st rib.
Ditto.	1¾ in. to pleura.
From a point 2 in. below centre of clavicle.	2 in. to pleura.
Chest: Posteriorly.	
To supraspinous fossa.	1 in.
To infraspinous fossa.	¾ in.
To transverse process of 7th cervical vertebra.	1½ in.
To pleura level of 7th cervical vertebra.	2 in.
To anterior level of body of 7th cervical.	3 in.
To transverse process of 12th dorsal vertebra.	1½ in.
To pleura level of 12th dorsal vertebra.	2 in.
To anterior level of body of 12th dorsal vertebra.	3½ in.
Abdomen: Thickness of Wall from Front.	
¼ in. to either side of middle line just above umbilicus.	1 in.
¼ in. to either side of middle line just below umbilicus.	1½ in.
Just internal to anterior superior spine to iliac fossa.	3 in.
Midway between anterior superior spine and pubic crest to front of acetabulum.	2 in.
Abdomen: Thickness of Wall from Side.	
On level of tip of 12th rib in line upwards from anterior superior spine.	1 in.
Abdomen: Thickness of Wall from Back.	
To transverse process 3rd lumbar.	1¾ in.
To anterior level of body of 3rd lumbar.	4¼ in.
To anterior level of psoas muscle.	5 in.
Hip and Thigh from Front.	
3 in. below anterior superior spine to head of femur.	2¼ in.
3 in. below anterior superior spine to neck of femur.	2-2¾ in.
6 in. below anterior superior spine (level of lesser trochanter) to front of femur.	1½ in.
To great trochanter.	4¼ in.
To lesser trochanter.	3¼ in.
Brim of pelvis 1 in. in front of sacro-iliac synchondrosis.	3¾ in.
To anterior inferior spine.	1¼ in.
To spine of ischium.	5 in.
To ischial tuberosity.	5¼ in.
To anterior surface of line of junction of ascending ramus of ischium and descending ramus of pubis.	2¾ in.
Hip and Thigh from Back.	
To ischial tuberosity.	2¼ in.
To spine of sacrum on level of posterior superior spines of ilia.	1¼ in.
To sacral groove.	2 in.
To head of femur	2 in.
To great trochanter.	3¾ in.
To lesser trochanter.	3 in.
To brim of pelvis 1 in. in front of sacro-iliac synchondrosis.	4 in.
To anterior inferior spine.	6 in.
To spine of ischium.	2 in.
To posterior surface of junction of ascending ramus of ischium and descending ramus of pubis.	4½ in.

The following are examples of anatomical depths estimated from the above measurements and given to various surgeons.

1. Rifle bullet lying in wall of pericardium, the point 2 inches and the base 1½ inches from a mark on the front of the chest. Successfully and easily removed.

2. Small metallic fragment 2 inches deep to a mark on the front of the thigh on a level of the lesser trochanter, stated to be lying between adductor brevis and adductor longus. Removed without difficulty.

3. Rifle bullet, the point 1¾ inches and the base 2¼ inches deep to a mark over the scapula, stated to be in the serratus magnus. Removed from that muscle.

4. Shrapnel bullet, 1¾ inches deep to a mark on the front of the chest just below the coracoid, stated to be immediately beneath the tendon of the pectoralis minor. Removed from that position.

SIMPLE TERTIAN MALARIA IN FRENCH FLANDERS.

BY A. C. RANKIN, M.D., C.M. McGILL, D.P.H.,
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To those interested in malaria Flanders and the campaign there offered from the beginning of the war an interesting series of problems. The flat, low-lying country, interspersed with canals, with the ground-water but a few inches from the surface, appeared to constitute an ideal malarial region. As a matter of fact, we know that only a century ago malaria was rife here. Whether the condition is still endemic it has been difficult to determine. Intermittent fever is spoken of, and a marsh fever is said to occur. Beyond these statements, the sources of which are not reliable, we have been unable to get any specific information. It looks as though the conditions in Flanders are very similar to those known concerning the British fen district. There ague was common a century ago, and has gradually died out, although anopheline mosquitoes are still present throughout the district. But this question of endemic malaria is of minor interest as compared with the second problem, that, namely, if similar anopheline mosquitoes be found still to exist in this district, whether the introduction into the district of large bodies of troops coming from tropical and malarial districts would result in any serious infection of the mosquitoes and in any extensive spread of the disease among hitherto uninfected troops, or among the inhabitants.

In attempting to gain an answer to this problem attention had to be given not merely to the introduction of malaria carriers into the region and the demonstration of the existence of anopheline mosquitoes, but, further, the climatic conditions had to be taken into account. It is now a familiar fact that below a certain temperature the parasites are arrested in their maturation within the stomach of the mosquito. Jancso has shown, however, that P. vivax can develop through a wide range of temperature. Granted that all other conditions were found favourable, it was a matter of distinct interest to observe whether in populations containing adult carriers and devoid of infected children the disease would spread to any serious extent. It is in relationship to these various problems that the observations here recorded may be found of interest. Having acted for four years as pathologist in a tropical country (Siam), certain regions of which are infested with malaria, I was keenly interested in observing the spread of this disease in a temperate zone.

With the arrival of certain of the troops in France there was introduced into Flanders a considerable number of individuals who harboured malaria parasites in their blood. Our records show that from the month of April to July 16th, 1915, we had examined the blood of 30 individuals for the presence of malaria parasites, and that of these five had shown the presence of plasmodium vivax. All these bloods came from the same troops. On July 19th we started the examination of a division which had been in service in a malarial country. The blood smears were taken at the field ambulances and sent to the laboratory with full notes as to previous attacks, &c. The blood of 200 individuals was thus examined, of which 93 showed the presence of P. vivax and four of L. malariæ.

These bloods were taken from individuals who presented themselves at the field ambulances with symptoms, and it is safe to presume that there were other infected persons in the division. As has already been stated, this division was recently from a malarial country. All those whose blood showed the presence of parasites, with one exception, had had previous attacks of the disease. I do not think it can be disputed that amongst certain troops there was also a considerable number of infected individuals. In April, having regard to the presence of infected humans within the area, and being aware of the fact that the troops during the latter part of the summer of 1914 had suffered to some considerable extent through the attacks of mosquitoes, a look-out was instituted for these insects. In May I saw a specimen of anopheles bifurcatus, a known malaria-carrier, which had been taken by Lieutenant-Colonel Swale Evans, I.M.S., in the corridor of a casualty clearing station within the area. On June 8th, by which time efforts were being made to establish the presence and distribution of anopheles within the area, a specimen sent to the laboratory by Captain Boyle, R.A.M.C., was identified as anopheles maculipennis, and shortly after this species, a notorious carrier, was found to be widely distributed throughout the area. It was common in billets, barns, and outhouses, and persisted till the end of September. The sylvan species, anopheles bifurcatus, was only met with occasionally.

The presence of these two carriers and especially anopheles maculipennis, considered to be of some importance when taken in conjunction with infected humans, did not lead to any great apprehension as to the possible spread of malaria amongst the troops in Flanders, as it was thought climatic conditions would be against it. The first case of malaria contracted within the area came under observation at the casualty clearing station on July 26th. The patient, a native of Scotland, had never before been out of Scotland and had never previously shown symptoms of the disease. He came into the area in the month of May. His blood showed a heavy infection with plasmodium vivax. Other cases of first infection came under observation on July 29th, August 6th (two), 21st, 27th, and 29th, Sept. 3rd, 6th, 8th, 10th, 13th, and 18th, and on Nov. 19th, making a total of 14 cases in all. The infection was in every case with P. vivax.

The patient seen on Nov. 19th came from Liverpool. He had never before been out of England and had not at any previous time shown symptoms of the disease. He arrived in France on July 21st and came into the area on August 1st. On August 16th he was billeted in a town from which we had previously seen a case of recently contracted malaria. He was in this town and its neighbourhood up to the time that he was sent to a casualty clearing station. He had his first attack on or about Oct. 1st. He showed a heavy infection with P. vivax.

Records of temperature kept in the laboratory show that in June the mean maximum temperature was about 69° F. for the month, and that the mean minimum temperature was 50°. Heavy rain fell on three occasions during the month. For the first 17 days of July the mean maximum temperature was 71°; otherwise the mean maximum temperature was approximately the same as for the month of June. The mean minimum temperature was 52°. Heavy rain fell once during the month. During August the mean maximum temperature was 71°, the mean minimum temperature 51°. There were four rain storms. From Sept. 9th to 28th the mean maximum temperature was 76°, but the difference between the maximum and minimum temperatures for that time and for the month was great. During October the temperature fell considerably.

The above details will give a rough indication of the range of temperature during which the cases under consideration became infected. Five cases occurred in August and six in September, and it would appear as if the majority of infections took place in the month of August. It is possible that some of the cases which occurred in the division previously mentioned were cases of reinfection.

Conditions in Flanders during the past summer and autumn were hardly favourable to the lengthy and robust life of individual mosquitoes, nor were temperatures constantly favourable to the development of parasites in infected insects. Nevertheless A. maculipennis of Flanders is evidently not too resistant nor yet too susceptible to convey a strain, or strains, of P. vivax, tropical or sub-tropical in origin, under the conditions that obtained.

WARFARE NEUROSES OF THE THROAT AND EAR.

BY JOHN F. O'MALLEY, F.R.C.S. ENG.,

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THE chief neuroses of the throat and ear met with in the present war are the following: (1) Functional aphonia; (2) mutism; (3) loss of volitional coughing; (4) functional deafness.

In functional aphonia vocal sounds are absent, the larynx is passive, but whispering, which is produced by the resonating cavities of the pharynx, mouth, and nose, remains. In mutism, both vocal and whispered speech are absent, the larynx and resonating cavities being passive, but the patient may make lip and facial movements as if attempting to speak.

Coughing, like speech, is a specialised function of the respiratory apparatus, depending for its particular qualities of sound on laryngeal and resonating cavity notes. The phonatory qualities are entirely absent after extirpation of the larynx, as coughing then resembles the sound produced by the sudden squeezing of air through the partially blocked orifice of a rubber water bottle. Coughing is partly under the control of the will and partly involuntary, the latter being a purely protective reflex act. In early life this function, like that of speech, is immature, and this probably explains why the phlegm of bronchitis is ineffectively expectorated in early infancy, except when expelled by the act of vomiting. The full power to expectorate develops with the laryngeal factor in coughing. The coughing of infancy bears somewhat the same relationship to that of later life, as the cry of the babe does to the speech of the adolescent. A typical cough can be produced by voluntary effort, although the conditions of the respiratory tract which are capable of exciting the reflex act are absent. Even when they are present, as secretion to be expelled, the typical or laryngeal qualities of the cough can be, at least partly, suppressed by central control. It is the voluntary side of the function which is absent as a neurosis, never independently of, but frequently in association with, functional aphonia.

Aphonia alone is the commonest of these neuroses, aphonia with loss of volitional cough comes next, mutism being still rarer. Deafness alone is rare, but mutism with deafness seems to be the least frequent of all.

The cases of laryngeal neuroses which came under my care were decidedly more common in the winter and spring than in the summer and autumn, and some gave a history of catarrh at the time of onset. This physical basis was still present in a few as a hyperæmia of the mucous membrane. The degree of the latter has some influence over the facility with which the voice can be restored, as the more pronounced the catarrh, the greater the difficulty in getting patients to phonate properly, because hoarseness and huskiness tend to persist for some time.

Physiology of Speech and Hearing.

Before attempting to discuss the probable factors concerned in these functional disturbances or to explain the rationale of the line of treatment adopted, I will briefly consider the physiology of speech and hearing.

Hearing as a function belongs to a different physiological category from speech. The former is classed as one of the special senses, with a specialised peripheral sense organ on a cranial nerve, whereby impressions are received and carried to the sensorium, and consequently it must be regarded in the domain of evolution as a protective function mainly. In the animal kingdom we find that certain individuals, liable to be used as prey by other more powerful species, have a particularly keen sense of hearing, which aids materially in the preservation of their existence. Hearing is also a function which appears early in the process of evolution, but the degree of its developmental activity has not continued to be augmented in the ascent, as many animals low in the scale have a more acute fundamental sense of hearing than man where sounds indicating danger are concerned.

Equilibration, which has its principal end-organ, the vestibule and semicircular canals of the labyrinth, intimately associated with, but capable of acting independently of, the cochlea or organ of hearing, is never disturbed in cases of

functional deafness. Other factors, such as the visual, tactile, and muscular senses, also contribute to the stability of equilibrium, which appears to be an essentially preservative and protective function. Hearing is also a more highly specialised function—namely, further removed from the purely reflex act, more under voluntary control, and appears later in the zoological series than that of equilibration, and is in consequence more prone to neurosis than the latter.

Speech, on the other hand, is not a special sense for the receipt of impressions, but a volitional motor function exercised by the upper portion of the respiratory apparatus for the emission of impulses originating in the sensorium. Although the power to emit laryngeal sounds exists far back in the scale of evolution, the highly complex function of speech is peculiar to man. It is represented in the cortex by a definite unilateral motor centre, which is intimately linked up by association fibres with the visual and auditory sensory centres, to form with these senses a visual and auditory word centre, the latter fulfilling the part of storehouses for the memory of speech.

Vision and hearing are in function soon after birth, but the power of speech cannot be exercised until the efferent projection fibres and the association fibres of the brain have undergone myelination and the auditory and visual word centres have stored up the memory of words. From these striking points of contrast it will be readily inferred that functions which are on the afferent paths and are primarily protective to the individual and which appear earlier in the scale of evolution and of the particular species and are not dependent upon voluntary control, are less easily disturbed in their activity than a function which is largely dependent upon will and memory and has appeared late in the zoological series.

The nearer a function approaches to a purely reflex act, intended to protect and preserve the animal existence, the less prone is it to neurosis. The reflex mechanism is very stabile and consequently is rarely affected, but it may be impaired by a considerable excess of irritation.

Causation: Rationale of Treatment.

I have already mentioned that some of my cases of aphonia had a slight physical basis, such as a laryngeal catarrh at the time of examination, or gave a history of such previous to coming under my care.

The function of a specialised organ depends upon a chain of control from the simple reflex action to the inhibitory or exciting influence of a voluntary centre. The reflex centre receives its impressions from local conditions and from its voluntary associate, but the voluntary centre receives its impressions from the special senses and from its reflex associate. Therefore, if local conditions are such as to forbid the active use of a reflex centre, the controlling centre becomes cognisant of this and tends to exercise inhibition as a natural sequence, but if at this moment the special senses convey some profound impressions to the voluntary centre the influence of the latter may be temporarily deranged. The function of the voluntary centre may also be influenced by impressions received through the special senses alone, to exercise excessive inhibition or excitation on the reflex centre. Take, for instance, the case of hydrophobia, where the mere sight of water excites spasm of the muscles concerned in swallowing. Inhibition or the loss of excitation appears to be the part played by the voluntary centre in cases of aphonia.

St Clair Thomson thinks that a reflex stimulus, when it reacts on a hysterical type, may originate an attack of aphonia. Starr, however, believes that reflex neuroses are due to defective central control and not to peripheral irritation. In my opinion, peripheral irritation may not only set up reflex stimuli which are capable of exciting inhibition of the voluntary over the reflex centre, but *vice versa*, normal stimuli to the latter centre may again induce the voluntary to exercise its proper function over its associated reflex centre. This belief underlies my reasons for adopting a certain systematic line of treatment in these functional cases, and I think it also explains the rationale of its effectiveness.

In support of this point of view let me instance the case of functional dysphagia. The act of swallowing is in three stages. The first from mouth to pharynx, the second from pharynx to œsophagus, and the third from œsophagus at cricoid cartilage to stomach. The first is purely voluntary, the second partly so, and the third is purely reflex. The usual treatment consists in carrying any instrument such as a bougie, beyond the voluntary and partly voluntary to the reflex region, the instrument then passing with ease and the power of swallowing being restored. Any foreign body other than a bougie, even food, if placed in the reflex area will pass to the stomach. This result is usually attributed to suggestion, which implies the conveyance to the centre of volition of an impression which excites the latter to active control over the function of swallowing; but I would suggest that it is the direct physical response to the excitation of associated nerve paths, whose coördination is temporarily in abeyance. The lower or reflex centre being stimulated conveys the stimulus to the higher or controlling centre and rouses the function of the latter into activity.

I am consequently of opinion that a laryngeal catarrh, as a physical basis, may have a decided influence in determining the onset of aphonia, but, of course, the latter may also, and commonly does, occur by the direct action upon the sensorium of impressions received through the special senses and by that of vision in particular, as vision is the sense by which we receive the vast majority of our sensorial impressions. I also believe that the excitation of normal laryngeal reflexes, such as involuntary coughing or retching, which are more primitive than that of speech and less prone to neurosis, will lead in cases with or without catarrh to the rapid restoration of the higher centre control, and that this is the true explanation of the cure in all the local intra- or extra-laryngeal methods of treatment.

Illustrative Cases.

The following is a summary of the cases which came under my care, 24 in all: Aphonia (alone), 17 cases; aphonia with loss of phonatory cough, 4 cases; mutism (alone), 1 case; mutism with functional deafness, 2 cases. Two cases had bullet wounds of the larynx. One case followed "gassing." Ten cases showed some laryngeal and tracheal hyperæmia. Eleven cases showed no evidence of catarrhal trouble at time of examination. Details of 7 typical cases:—

CASE 1. *Bullet wound of larynx.*—Rifleman, aged 23. When three months in France he was wounded. A bullet traversed the upper part of the thyroid cartilage. He came under my care eight months after the injury and gave a history of having lost his voice immediately and expectorated some blood at the time (indicating an intralaryngeal injury). On examination, no intralaryngeal lesion could be found, the cords approximated well on coughing but not on phonation, and he could only whisper. On using the mirror as described below, he phonated well and had a moderately good voice, but very slightly hoarse.

CASE 2. *Bullet wound of larynx.*—Corporal, aged 28. Two months previously a bullet passed through his neck. The wound of entry was in the middle line, at the upper border of the thyroid cartilage and that of exit behind the right sterno-mastoid muscle, about two inches below the point of entry. He gave a history of having lost his voice at time of injury, expectorated about a teaspoonful of blood and could only whisper since then. No intralaryngeal lesion was discernible, his cords approximated on coughing, but not on phonation. After a few minutes' treatment with the mirror he spoke perfectly.

CASE 3. *"Gassing."*—Bombardier, aged 22. He was "gassed" at Ypres ten weeks previously and lost his voice. He had electricity applied externally to the neck five or six times since returning from France at another hospital. The cords did not approximate on coughing or phonating. First day of treatment with mirror his cough returned. Second day cough and phonation were produced. Third day he coughed and phonated well and remained well.

CASE 4. *Typical of cases with catarrh.*—Private, aged 36. Six months previously he had a cold and wheezing on the chest when in the trenches and his voice disappeared. One month previous to my seeing him he began to whisper—that is, five months after the onset of the attack. There were still some areas of hyperæmia in the larynx and trachea, his cords approximated on coughing, but not on phonation. On the use of the mirror his voice returned promptly and he could phonate well.

CASE 5. *Typical of non-catarrhal cases.*—Private, aged 21. Voice lost on returning to rest from the trenches after a period of active bombardment one month previously. He could whisper only. His cords approximated on coughing, but not on phonation. Voice returned quickly after using the mirror.

CASE 6. *Typical of mutism.*—Private, aged 20. Complete loss of speech in the trenches following the bursting of a shell some yards away ten days previously. He was not otherwise injured. He could not whisper or phonate, but made lip and face movements as if attempting to speak. The

cords approximated freely on coughing, but not at all on phonating—i.e., when requested to phonate. His voice came back in about three minutes with the use of the mirror.

CASE 7. *Typical of mutism and functional deafness combined.*—Private, aged 20. After the battle of Neuve Chapelle he lost his speech and hearing, eight days previous to coming under my care. He appeared very excited and pointed to his lips and ears, and carried a note stating that he could not speak or hear and had not done so for eight days. Without examination I came to the conclusion that his condition was probably functional, and I wrote on a piece of paper that I would restore his speech and hearing. I then used the mirror until he retched, and wrote again, "You can speak now; count up to ten loudly"; and he did so. I next used the cold-water douche to the right ear until he became giddy, and then shouted through a speaking-tube, "You can hear now?" and he replied "Yes," with tears streaming down his face. He conversed freely afterwards, but was rather emotional.

Treatment.

Once the diagnosis of a laryngeal neurosis is established, whether the case is one of aphonia alone or aphonia in combination with the loss of volitional coughing or mutism with the latter, the sole aim of treatment is first to excite involuntary coughing or surprise laryngeal sounds over which the patient has no control. If any catarrh of the larynx exists the usual treatment for this condition is applied, very special attention being paid to the influence of nasal obstruction and tonsillar or adenoid sepsis as causes of laryngitis. There is nothing new in the line of treatment adopted to restore the voice, but the systematic method of its application and the reasons for doing so, are the points which I desire to emphasise.

The patient is placed in the common position for the examination of the larynx, the tip of the tongue being seized in a piece of linen by the left-hand fingers and the laryngeal mirror introduced with the right hand. The patient is then requested to say "e" or cough, and if the cords do not approximate, they can be made to do so by using moderate friction on the fauces and pharynx with the mirror to excite secretion. The latter begins to drop into the larynx, and acting as a foreign body, a protective reflex is at once excited which adducts the cords to prevent the secretion from entering the trachea. At the same time an involuntary cough is produced to expel the mucus, and if the friction and flow of secretion are maintained and the patient is urged to cough vigorously, voluntary coughing and a tendency to retching with forced laryngeal notes will rapidly follow. It is usually best to persist until retching occurs, as the cords are then forced together to protect the larynx and trachea from the possible entrance of regurgitated stomach contents. Involuntary laryngeal sounds are thus produced and the patient is conscious of laryngeal effort. Some of these cases are at the moment very shallow breathers, which can be demonstrated by X ray screening, but the act of retching causes a wide excursion of the diaphragm with a more pronounced expiratory blast, to be rapidly followed by deeper inspirations. This method of treatment is best carried out just before a meal, as the stomach is then practically empty and the unpleasant effects of the sudden regurgitation of food are avoided. When the explosive sounds accompanying retching have occurred two or three times the mirror is withdrawn, the tongue released, and the patient is requested to swallow, take a deep breath, and cough, and then urged to count up to ten, directing his voice to a certain point on the ceiling. This method has given me uniformly good results, and was rapidly effective in all cases coming under treatment soon after the onset of the neurosis.

The treatment of functional deafness consists in exciting the vestibular apparatus as follows. Cold or hot water is allowed to flow in a steady stream into and out of the external auditory meatus by means of a tube attached to a receptacle placed about one and a half to two feet above the patient's head and continued until he becomes very giddy and an active nystagmus is produced. A speaking-tube three feet long is then used by placing the ear-piece in the ear so treated, and the surgeon shouts into the mouth-piece the assertion, "You hear now," and the answer "Yes" comes promptly. The tube is now dropped and a conversation held as if no deafness ever existed. So far I have found the treatment of one ear sufficient. The patient is usually very emotional, as the disturbed vestibular function, which in these cases responds easily and markedly, causes him to feel as uncomfortable as a bad sailor on a stormy voyage. This feeling, however, rapidly gives way to one of pleasure at the return of his hearing. Where functional deafness and mutism co-exist it does not appear to be material which is treated first. In two cases of this kind under my care I treated the loss of voice first. Some of the cases diagnosed as shell deafness are partly, if not wholly, functional, and will respond to the treatment described above.

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NOTES ON CASES OF HEAD, ABDOMINAL, AND JOINT INJURIES.

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THE following brief notes relate to some of my personal work from Oct. 17th to Dec. 31st, 1915. The wounded, except a small minority detained at field ambulances, usually reached the hospital within a few hours of being injured.

Head Injuries.

Wounds limited to the soft parts were excised completely and sutured. By this method sepsis was eradicated with certainty, the period of convalescence was shortened, and the condition of the skull beneath ascertained. All these cases when discharged had healed by primary union.

In wounds with injury to the bone the soft tissues, including the pericranium, were excised. Two cases presented only a staining of the external table. This stained area was removed by chisel and mallet. Five cases showed grooves of the external table with no evidence of brain injury. In two cases the grooved bone was removed by chisel, and in three cases the trephine was used. All healed by first intention, excepting one case in which a shell fragment had removed a large piece of the scalp and tissues.

A number of cases of fracture of both tables without laceration of the dura mater were treated. The fractures belonged to the gutter or fissured types with varying degrees of depression. In those cases with elastic dura and cerebral pulsation the operation ended with the removal of bone and suturing of the scalp, a drain being provided at one angle of the wound. The cases (13) were kept for a minimum period of seven days. Union took place by first intention; there were no deaths.

The cases with laceration of the dura were treated as above with the addition of excision of the edge of the dural opening and its enlargement if indicated. Driven-in fragments of bone were removed. In one case with established sepsis (a Turkish prisoner found in "no man's land" three days after being wounded), a soft drain was placed in the injured brain area. In this class of 19 cases 10 were fatal. A large proportion were "hopeless" on admission, death taking place a few hours later. They were "cleaned up" only. In five cases the scalp wound was sutured and a drain was inserted; one died within two days; three were discharged to hospital ship in apparently a satisfactory condition; the fifth presented a fluctuating swelling beneath a perfectly healed scar, with no inflammatory signs. Semi-fluid, like disintegrated brain matter, was evacuated by reopening part of the wound, and the after-progress was uneventful.

Abdominal Cases.

Eight cases of abdominal wounds and two cases of perforating typhoid ulcers were operated upon. Five cases of the first class and one of the second were fatal. All the wounds were due to grenade, shrapnel, or shell (none to rifle bullets).

CASE 1.—Private; grenade bomb wound. Entrance wound in the right eighth intercostal space, mid-axillary line; exit in left upper abdomen, grooving costal cartilage. Admitted 24 hours after being wounded. There were signs of bleeding, fluid in the peritoneal cavity, and peritonitis. The exit wound was excised, blood evacuated, and a tube inserted down to the wound of the liver; there was no active hæmorrhage at time of operation; the small bowel was distended and congested. A pelvic tube was placed through a supra-pubic incision. The after-progress was complicated by right basal pleuro-pneumonia. Satisfactory progress was reported from England.

CASE 2.—Lance-corporal; multiple grenade wounds of limbs and chest. There was a history on admission of abdominal pain for three days. Whilst, on account of this pain, waiting for a stretcher was wounded by a grenade, and the pain became intensified and changed its character. On admission the abdomen was rigid and tender, especially over the gall-bladder. On laparotomy, blood was found in the peritoneal cavity with bile in the neighbourhood of the bile-ducts. A small metallic fragment was found lying near the junction of the cystic and hepatic ducts; a drain was inserted down to the ducts. The abdominal wound healed without trouble, but there was sepsis of the limb wounds. A basal pleuro-pneumonia acting on an originally enfeebled physique proved fatal.

CASE 3.—Private; grenade wounds of spine (slight symptoms) and abdomen. Admitted 24 hours after being wounded. There was a hyperæsthetic rigid abdomen, with signs of fluid, constant vomiting, and frequent desire to pass urine. A catheter was passed, and a few drachms of clear urine were drawn off. On laparotomy the peritoneal cavity was full of blood; there were large wounds of the upper jejunum, with fouling of the peritoneum. The intestinal wounds were sutured and the peritoneal cavity cleansed. Drainage-tubes were inserted down to the wounds in the bowel and in the pelvis. No wounds of the urinary apparatus were found. After-progress: Vomiting continued for 36 hours and then ceased. There was no secretion of urine for 48 hours; then urine was passed per urethram and by the upper abdominal tube. The suppression of urine was accompanied by symptoms of uræmia. There was persistent diarrhœa. Death took place 72 hours after operation.

CASE 4.—Shrapnel wound of abdomen. The general condition was bad. On laparotomy 11 large perforations of the ileum were found. Resection of bowel was done, Paul's tubes being used; lateral anastomosis was performed a few days later. Death occurred five days after the second operation. Immediate anastomosis would probably have saved this case.

CASE 5.—Multiple grenade wounds, including the liver. Patient admitted with marked symptoms of bleeding. On laparotomy a large lacerated wound of the right side of the liver was found with much blood in the peritoneal cavity. The wound was plugged. The patient failed to rally, death taking place ten hours later.

CASE 6.—Shell wound of abdomen. Laparotomy was performed and a medium-sized perforated wound of the small bowel was sutured, the pelvis being drained. After-progress was uneventful.

CASE 7.—Lieutenant; shell wound of abdomen. On laparotomy seven perforations of the small bowel were found. Double resection was done, drains being inserted down to the anastomosis and in the pelvis. After-progress was uneventful, and the patient was discharged to England three weeks after leaving ——.

CASE 8.—Shell wound of abdomen. Laparotomy revealed a perforation of the stomach and hæmorrhage from the cœliac axis. The perforations were sutured. Death ensued 12 hours later.

In all these cases the wounds were of such a nature that recovery without operation was an apparent impossibility.

Perforating typhoid ulcers.—Both cases were typical and the diagnosis was made certain only by laparotomy. Each patient had had two antityphoid inoculations. Tests for paratyphoid A and B were not made. In one case the affected bowel was intensely inflamed, swollen, and sodden, and the perforation was sutured with difficulty. Death took place 17 days later. At the necropsy the perforation was securely closed, a near-by ulcer had nearly perforated, and there was a general peritonitis partly loculated. The other case was of a milder character. The perforation was closed and the after-progress was uneventful.

Wounds of Joints.

In simple wounds with bleeding into the synovial cavity but with probably no marked "fouling" of the joint cavity the wounds were excised down to the capsule. The joint was irrigated with saline and 5 c.c. of 10 per cent. solution of iodoform in ether were injected. In cases complicated by comminution of the bones entering into the formation of the joint, the wounds of the soft parts were excised as thoroughly as possible. Loose fragments of bone were removed, and the wounds were irrigated with weak carbolic or biniodide followed by saline. The injured bone received special attention, and "fouled" areas were removed. Drainage-tubes were inserted down to the capsule with separate drainage for the injured bone area. The results in cases of simple wounds were uniformly satisfactory; in those of a severe type the results were also good so far as they could be traced.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

THE ODOUR OF PAINT AS A CAUSE OF PLUMBISM.

BY H. H. MOYLE, M.R.C.S., L.R.C.P. LOND.

I BELIEVE few cases of this form of lead poisoning have been known and recorded, and I am somewhat reluctant to commit myself to the above title, yet being fully alive to the very great difficulty sometimes met in detecting the source of the poisoning I cannot but help feeling that the following cases are definitely due to the smell of paint only. The following is the history.

A man, his wife, and child occupied a cottage of two living and two bedrooms, all small, which early in October, 1915, was papered inside and thoroughly painted inside and outside, extending over about three weeks, the occupants living in the house as usual. The smell was commented upon at the time to one of the painters, eliciting the remark of "cheap tack and war time." At the end of November the man came to me complaining of vague pains in abdomen, nausea, and feeling of discomfort after food which at the time I treated for dyspepsia with bismuth, &c., with relief. Some days later I was called to see the wife, who was suffering from abdominal pains. On entering the house the smell of paint was most noticeable.

On examination of the woman nothing definite could be made out. Temperature and pulse normal, and she being of a somewhat neurotic temperament I decided that a little pain had been exaggerated and would be relieved if the bowels were opened. The same evening I was again called to see her. The abdominal pains were worse, and perhaps referred to region of gall-bladder more than another, yet they were more or less vague. No history of a previous jaundice, and the appendix had been removed about 18 months before. Temperature 99° F; pulse normal. Satisfied that there was no acute abdominal condition present I left haustus tr. opii ½ dr. for her. I saw the husband at same time, found he had not been so well and had stayed in bed.

On the following day the woman's pains were decidedly better. Temperature and pulse normal. On examination of her mouth the teeth and gums were in excellent condition except for three—viz., upper canine and two lower bicuspids. The gums opposite these showed a definite blue line. I immediately examined the man's mouth and found a well-marked blue line not only on the gums, but on cheeks and lips which came into contact with gum margin.

The cases presented the ordinary symptoms of lead poisoning, that of the man being more severe than the woman. Now as to source of poisoning. Occupation: The man does not come into contact with lead at all, while the woman in addition to her household work looks after railway crossing gates. Water-supply: Examination negative as to lead. Other fluids: Wife teetotal, man teetotal except for occasional glass of cider. Food: Negative to direct contact. Fuel: Wood (unpainted) and coal. Usual china cups and plates, and nickel spoons, forks, &c.

As already remarked, the paint smelt very strongly and was rather sticky to the touch, even eight weeks after painting. I found the food had been kept in a small unventilated cupboard. With regard to actual contact with the paint by hands, this might occur in going upstairs to steady oneself (there being no hand-rail) by means of touching a wall and partition. Otherwise there was no reason to touch any painted surface. In the bedroom the bed was close up to the walls at foot, head, and one side. Two windows I have reason to believe were rarely opened.

In support of my title one knows that the illness caused by inhalation of paint odours is usually due to lead hydroxide acting on the oils and driers in the paint liberating deleterious aldehydes, and Murrell says: "Sleeping in a freshly painted room has been known to cause lead poisoning." I think that these two cases, living in a strong atmosphere of paint, and especially at night being so close to recently painted walls, certainly were the victims of plumbism from a rather unusual source. It seems, therefore, that a poor drying paint (? cheap), especially with deficient ventilation, may cause this illness, and more particularly amongst those who occupy small rooms, and are thus brought into more intimate contact.

Henstridge, Somerset.

DIABETES INSIPIDUS DEVELOPING SUDDENLY, WITH UTERINE FIBROIDS; HYSTERECTOMY.

BY JAMES OLIVER, M.D.EDIN., F.R.S.E.,
GYNÆCOLOGIST, HOSPITAL FOR WOMEN, SOHO-SQUARE, W.

THE occurrence of diabetes insipidus in the adult female is a rare event, and its sudden development in association with any extreme tension created by a neoplasm in the pelvis or elsewhere has seldom been observed.

The patient was a woman, aged 44 years, who had been married 16 years and had never been pregnant. She was menstruating regularly, and the discharge, which invariably lasted seven days, had always been excessive. Quite suddenly, four weeks before coming under my observation, the patient developed an insatiable thirst, and noted at the same time an inordinately frequent desire to pass urine. The first menstruation which occurred after the aforesaid disturbances was unusually painful, and it was the pain experienced at that period which induced the patient to seek immediate advice. The following physical signs were then noted. Examination of the abdomen even on deep pressure detected nothing abnormal. Per vaginam the cervix was located far back; it was not enlarged and the os was not open. In front of the cervix the vaginal roof was pushed markedly down by a small globular swelling of about the size of an orange. To the right of the cervix was an irregular extension of the uterus. The uterus, which was about five times its normal size, was practically immovable due to the location anteriorly and laterally of fibroids in its substance. During the first 24 hours of the patient's stay in hospital she passed 259 ounces of colourless urine, the specific gravity of which was just 1000. As I considered it injudicious to subject the patient to hysterectomy with urine passed equalling that of distilled water I decided to watch her for a week or longer if necessary. I prescribed for her a pill containing oxide of zinc and valerianate of zinc (2 grains of each), and this pill was taken three times a day. As the quantity of urine passed during the succeeding four days did not diminish and the specific gravity was still that of distilled water, I discontinued the pill and prescribed chloride of calcium in 10-gr. doses three times a day. Two days after starting the chloride of calcium the quantity of urine fell to 116 ounces and the specific gravity rose to 1004. The chloride of calcium was continued for eight days longer before operative interference was decided upon, and during those days the quantity of urine never exceeded 100 ounces and the specific gravity varied from 1004 to 1010. The urine never contained any albumin.

Operation.—Hysterectomy was performed. The operation was difficult because the uterus could not be brought up even into the abdominal wound until the fibroid located anteriorly had been enucleated from its bed and until the right broad ligament had been severed down to the pelvic floor. Both ovaries had to be removed with the uterus. The quantity of urine passed during the three weeks after the operation varied from 80 to 100 ounces, and the specific gravity kept steadily about 1004. The patient progressed satisfactorily, and when she left the hospital she was passing from 50 to 60 ounces of urine daily, the specific gravity of which was from 1005 to 1007.

Harley-street, W.

CASE OF ACUTE TETANUS WITH HÆMATEMESIS.

BY VIVIAN M. MÉTIVIER, M.R.C.S., L.R.C.P.LOND.

I AM indebted to Dr. J. B. Cook, medical superintendent of Isleworth Infirmary, for his kind permission to publish the notes of this case.

Patient admitted to infirmary on Feb. 22nd at 9 P.M. On Feb. 11th, while scrubbing steps a splinter of wood entered deeply under her right thumbnail. On the 19th she had pain and stiffness in her back and neck, which became more severe on the 20th, the sharp attacks of pain making her cry out. The unusual way the symptoms set in led to the wrong diagnosis of hysteria. On the 21st the mouth was opened with great difficulty. On admission the typical symptoms of tetanus were present. Opisthotonos not severe, but spasms came on every four minutes. The teeth could be separated sufficiently to give food. Full doses of chloral and bromides, and subcutaneous injections of morph. tart., gr. ½, and 10 c.c. of 15 per cent. mag. sulph. solution were given statim. The wound in the thumb, which on opening up appeared healthy, was thoroughly cleaned and dressed.

Feb. 23rd: Patient slept for short intervals from 1 to 3.30 A.M. Spasms about every 20 minutes. After full dose of chloral at 3.30 A.M. she slept for longer intervals, and from 7.30 to mid-day sleep was fairly sound and only interrupted with spasms, when she was disturbed. Retention of urine made necessary catheterisation eight-hourly. At 1.30 P.M. spasms began to be troublesome again, and at 3.30 P.M. were more severe, coming on every five minutes Antitoxin (B. W. and Co.), 1500 units, was given intrathecally under chloroform, also 7 c.c. of 15 per cent. mag. sulph. solution. Patient vomited curdled milk in afternoon. At 7.30 P.M. subcutaneous injection of 2 per cent. carbolic (10 minims) repeated eight-hourly. Vomiting continued, and patient was put on diluted peptonised milk; vomiting ceased in evening. At 9 P.M., under chloroform, an attempt to inject antitoxin into nerve sheaths in right ante-cubital fossa was not very successful, the greater part of 1500 units being injected into the tissues exposed. Full doses of chloral and bromides given at 11.15 P.M. During the night frequent spasms, and she did not sleep.

Feb. 24th: At 8 A.M. patient was sleeping and improved again. Menstruation started and continued throughout. 1500 units antitoxin and 10 c.c. mag. sulph. solution subcutaneously. She was quieter towards afternoon; teeth could be more widely separated. Slept from 6 to 9 P.M. Spasms now returned and gradually increased in frequency. At 10 P.M. full doses of chloral and bromides. She was fairly comfortable from midnight to 3 A.M. Feb. 25th: Spasms every 20 minutes during early morning. Chloral and bromides in full doses at 6 A.M. At 10 A.M. much less rigidity; mouth could be opened voluntarily. During day 2500 units antitoxin subcutaneously. Only 20 ounces of urine secreted in 24 hours. Bowels remained confined since the 23rd, in spite of enemata. Brownish fluid like beef-tea vomited in afternoon. Calomel 3 gr. given in small doses followed by saline aperient. Muscles of neck and back less rigid. Vomiting continued throughout evening, becoming darker in colour, with small lumps, and of "coffee-ground" character. No bleeding from tongue or gums. Adrenalin chloride (1 in 1000) one drachm in two ounces of iced water was given by mouth at 10.30 P.M., and patient put on modified Lenhartz diet. At midnight she became very collapsed—rapid, thready pulse, and cold extremities. Normal saline with 2 per cent. glucose solution started per rectum, foot of bed raised, and patient kept warm with hot-water bottles. Digitalin gr. 1/100 hypodermically.

Feb. 26th: Vomiting continued in early hours of morning. Adrenalin chloride repeated at 4.45 A.M. At 5.30 A.M. hypodermic injection of morphine and atropine. Vomiting ceased soon after. At 10 A.M. she was improving; pulse fuller and stronger. No spasms throughout the night. The teeth could be still more widely separated. The whole of the back touched the bed, and the neck was slightly bent forward on the pillow. Two very slight spasms during the day. Patient had had no chloral or bromides since the 25th, 6 A.M. Antitoxin, carbolic, and mag. sulph. injections discontinued. Ten ounces of urine withdrawn in 24 hours. Towards evening pulse became more feeble again; no vomiting. Rectal saline was recommenced. Pulse gradually became imperceptible. Digitalin and pituitary extract were given subcutaneously. Towards 6 A.M. on the 27th she became unconscious, passed into a state of coma, and died soon after.

Necropsy.—The stomach contained about eight ounces of altered blood and fluid, and the small intestines blackish-brown fluid in large quantities. The mucous membrane of first part of duodenum was of a dark black colour over two areas—one the size of a shilling and another a little larger, and more irregular. This change appeared to be due to hæmorrhage into the mucous and submucous tissues. There was no sloughing or ulceration. The mucous membrane of the stomach showed deeply injected areas with prominent bright red capillaries varying in size from a contracted to a dilated pupil. One larger patch, about as large as a sixpence, appeared somewhat like a piece of skin deprived of its uppermost layers for a Thiersch graft.

Brentford Union Infirmary, Isleworth, W.

DEVON AND CORNWALL SANATORIUM FOR CONSUMPTIVES, DIDSWORTHY, AND KING EDWARD VII. MEMORIAL DISPENSARY.—The annual meeting of the friends of this institution was held on May 19th. The report showed that the charity had now 70 beds, 40 for men, 30 for women. The daily average number of patients was 60. During the year of the patients admitted 114 were in the first stage of the disease, 123 in the second, and 35 in the third stage. The committee had given the first call on beds to tubercular sailors and soldiers. The London Hospital Sunday Fund had subscribed £875, and ten beds were reserved for cases from London hospitals. 1200 patients had been treated at the dispensary since it was opened in 1910.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF OBSTETRICS AND GYNÆCOLOGY.

Primary Cancer of the Fallopian Tube (with an Exhibition of Specimens).—Unilateral Solid Primary Adenoma of the Ovary.—Pneumo-peritoneum.

A MEETING of this section was held on May 4th, Dr. M. HANDFIELD-JONES, the President, being in the chair.

Dr. HERBERT SPENCER read a short communication on a fourth case[1] of Primary Cancer of the Fallopian Tube. The tumour was removed, together with the uterus (which contained an adeno-myoma and a small myoma) and a simple ovarian cyst with which the ostium of the tube communicated (tubo-ovarian cyst). The cancer occurred in the ampulla of the tube, to which it was confined. The growth was a carcinoma resembling in many places a sarcoma. Extensive keratinisation was present. Sections were shown demonstrating the origin of the cancer from the epithelium of the tubal plicæ. The growth recurred in the pelvic colon, a piece of which was excised and an end-to-end anastomosis made. The growth again recurred and was not influenced by X ray treatment. The sequence of events in the development of the cancer in this case appeared to be (1) salpingitis with simple invasion of the muscular wall by tubal glands; (2) papilloma; and (3) malignant invasion of the wall by glands, the epithelium of the glands and of the papilloma becoming proliferated to form cancer.—Dr. H. RUSSELL ANDREWS showed a specimen of Bilateral Carcinoma of the Fallopian Tube. The patient, aged 55, had been married twice, but was childless. The menopause occurred at the age of 49. In December, 1914, she began to have a discharge of blood, and later the discharge "turned to pure water." She said that she had lost as much as a quart a day. She was admitted to the London Hospital in March, 1916. The profuse watery discharge was thought to suggest the presence of carcinoma of a Fallopian tube. The abdomen was opened and both tubes were found to be greatly dilated, the left forming a mass 6 by 2½ inches, and the right 4 by 2 inches. The uterus was atrophic, and showed nothing abnormal. The cavity of the right tube was almost filled by papillary growth; the left contained a good deal of similar growth, but was not so tightly filled. Dr. Andrews considered that the growth was a papillary carcinoma, but thought that there might be some discussion as to whether it should not be called a papilloma, and suggested that the specimen should be referred to the Pathological Committee.—Lady BARRETT showed a specimen of Primary Squamous-celled Carcinoma arising in a tuberculous Fallopian tube. The patient, aged 46, married nine years, sterile, had complained of pain in the right iliac fossa for 10 years. There was a hard, well-defined tumour in the right side of the lower abdomen. On vaginal examination Douglas's pouch and both lateral fornices were found filled up by the swelling. The uterus and both tubes and ovaries were removed. The right tube showed very extensive tuberculous disease. The left tube was lined by tuberculous granulation tissue, and towards the outer end there was squamous-celled carcinoma with keratinisation and a few cell nests. There was no carcinoma in the uterus, and numerous sections of the ovaries failed to show the presence of dermoid tissue.—Dr. CUTHBERT LOCKYER showed a specimen of precancerous changes seen in the displaced epithelium of nodular salpingitis.—The following remarks by Mr. ALBAN DORAN were read by the Senior Secretary: "Having read the records of later cases of cancer of the Fallopian tube with much interest, I have come to the conclusion that primary cancer is the rule—a statement I would not have dared to make in 1888, when I described the first case under my personal observation. The malignancy of tubal cancer is of a very high degree, even after the most modern and radical operations, yet after-histories rarely include any suggestion of a primary seat other than the tube. How comes it, if according to some authorities tubal cancer is always secondary, that the primary disease happens to be always latent when a tube is amputated for carcinoma? Do we often meet with such a pathological phenomenon in the case of the breast or tongue? The Wells-Bickersteth case of papilloma teaches us that a new growth of a type which later experience has shown to be very liable to malignant degeneration may be absolutely confined to the Fallopian tube. When such degeneration occurs the tube must of necessity be the primary seat of carcinoma."—Dr. HEYWOOD SMITH asked Dr. Spencer with regard to the first case he had narrated whether, if the oviducts had been opened at once and had been found malignant, and if, therefore, the other one had been removed, in his opinion it would have given the woman a better chance, or was it another case where a woman had neglected to realise the importance of abdominal symptoms?—Dr. F. J. MCCANN discussed Dr. Andrews's specimen.—Dr. SPENCER and Dr. ANDREWS replied.

Dr. HENRY BRIGGS read a paper on Unilateral Solid Primary Adenoma of the Ovary. The recognition of a benign solid glandular growth—an adenoma—as a rare primary tumour of the ovary was the main purpose of this communication.

Mr. J. D. MALCOLM related a second case of Pneumo-peritoneum probably induced by the bacillus aerogenes capsulatus.

[1] The three earlier cases were published in the Journal of Obstetrics and Gynæcology of the British Empire, 1910.

MEDICO-PSYCHOLOGICAL ASSOCIATION OF GREAT BRITAIN AND IRELAND.

Experimental Toxic Lesions in the Rabbit's Brain and Their Bearing on the Genesis of Acquired Idiocy and Imbecility in Man.

A quarterly meeting of this association was held at the rooms of the Medical Society of London on May 16th, Lieutenant-Colonel DAVID G. THOMSON, the President, being in the chair.

Two papers upon the above subject were read, one by Dr. David Orr (Prestwich) and the other by Major R. G. Rows, R.A.M.C. (Maghull, Liverpool).

Dr. ORR said this communication was a continuation of the experimental work of his colleague and himself on the action of the bacterial poisons on the nervous system, the conclusions of which they briefly reviewed. In the former work the induced toxic action was studied in the spinal cord only, and in the present series the research had been extended to the brain, a capsule containing staphylococcus aureus having been placed in contact with the common carotid artery in the neck. The positive results so far obtained helped to explain the pathogenesis of certain obscure lesions of the central nervous system which were found in man. Rabbits were used for experiment, and two types of lesion had been observed up to the present: first, coagulation necrosis of the nerve cells in the cornu ammonis—the histology of which was carefully described—and in the more superficial layers of the cerebral cortex; secondly, there was a softening in the stratum moleculare of the cornu ammonis. The changes in the cerebral cortex it was proposed to make the subject of a further communication. The alterations seen as the result of the poison were typically those of coagulation necrosis. The neuroglia participated actively in the inflammatory reaction, and around the area of softening there was found to be much neuroglial proliferation and hypertrophy. There was a high degree of proliferation of the adventitia of the small vessels in the immediate vicinity of the softening. The research showed that the two factors, degree and situation, could produce dissimilar pathological results, although the pathogenesis was the same. Applying this to clinical neurology it became evident that certain nervous syndromes, though widely different in symptomatology, were pathogenetically, one and the same disease, the different symptomatology being largely due to the anatomical site of the lesion. The experiments also shed light on the genesis of the infantile cerebropathies, which were now regarded as due to toxi-infections of medium intensity contracted between the fifth and the eighth month of fœtal life, or, more rarely, in early infancy. The paper was illustrated by lantern slides.

Major ROWS drew attention to some of the problems connected with the vegetative system, which included both the sympathetic and autonomic systems. Under the term "vegetative nervous system" were included all the fibres which go to the organs having smooth muscles, such as intestines, blood-vessels, glands, ducts,

and skin, as well as the nerve structures exerting a secretory influence upon glands; it also embraced certain organs with cross striated muscles, such as the heart, the beginning and the end of the alimentary canal, and the muscles of the genital apparatus. Anastomoses were common among the nerve fibres of the vegetative system. This system also had a much more independent action, and it reacted to drugs in an altogether different manner; indeed, it was from the latter that so much had been learned about it. A sort of balance seemed to be maintained between the autonomic and the sympathetic systems, so that one assumed an exaggerated action if the influence of the other were interfered with. Both systems were much affected by the secretions of various endocrinic glands. Dr. Orr and he had demonstrated that changes could be produced both in the vegetative system and in the central nervous system by placing a capsule containing pathogenic organisms in the neck, near the carotid artery, or in the abdominal cavity; and they suggested that the disturbances in this system were closely connected with the origin of the lesion in the central nervous system, a view which was supported by clinical evidence, instances of which were given. Major Rows spoke of the importance of investigating the emotions from the biological side. In conclusion, he said that medical men would probably learn much if, instead of separating the brain from the spinal cord, and the latter from the vegetative system, in their investigations, they would regard the nervous system more as a whole, and appreciate more fully to what extent a disturbance in one portion might interfere with the functional activity of the remainder.

Reviews and Notices of Books.

Bernhardi and Creation: A New Theory of Evolution.

By Sir JAMES CRICHTON-BROWNE, M.D., D Sc., LL.D., F.R.S. Glasgow: James Maclehose and Sons. 1916. Pp. 72. Price 1*s.* net.

Sir James Crichton-Browne starts by finding that the war has caused a rude shock to science in that her finest discoveries and best energies have been requisitioned not for the saving or the adornment of human life but for its destruction. He proceeds to make hay of the theory that war is justified on the Darwinian or *struggle-for-existence* principle, pointing out that Bernhardi when taking up this view regards varieties as species, forgetting the physiological unity of the one and the ethnological diversity of the other. But while war is a reproach to science, he finds it to be a great stimulus to religious thought, and he expects that our present trials will prove a stimulus to the growth of altruistic feeling which has already been a characteristic of the civilised nations during the last century. "The war," he pleads, "has in some ways fanned the sparks of religion and brightened them into flame. With no return to mediæval superstition, there is a widespread realisation of the supernatural ..... a feeling that we cannot stop at the Sermon on the Mount, but must ascend to the Incarnation. At home there has been a quickening belief in the spiritual life, and men and women who doubted it before have felt its inrush in prayer, not mere mechanical mumbling: and in moments of patriotic exaltation or of profound solitude, in hours of intense anxiety or poignant sorrow." Sir James Crichton-Browne's essay is eloquent and inspiring.

Chemical Constitution and Physiological Action.

By Professor Dr. LEOPOLD SPIEGEL. Translated with additions from the German by C. LUEDEKING, Ph.D. Leipsic, and A. C. BOYLSTON, A M. Harvard. London: Constable and Co., Limited. 1915. Pp. 155. Price 5*s.* net.

THE profusion of synthetics, while somewhat bewildering, has been largely responsible for remarkable development of knowledge as to the relation of chemical constitution to physiological action. This is demonstrated in the evolution of organic arsenic molecules which now find application in the treatment of syphilis. Progress has been made easier by the facility with which organic compounds can be modified by substituting fresh groups or giving the same groups different positions in the molecule. This small volume deals with such questions, and, as might have been anticipated, the subject-matter relates chiefly to organic compounds, only 24 pages out of a total of 155 being allotted to inorganic compounds. It amounts to an instructive study of certain groupings which furnish the preliminary basis for certain effects. We learn, for example, how the physiological action of compounds can be modified, weakened, or strengthened by the action of individual side-chains, and a very clear account is given of the present position of the relationships of chemical constitution to physiological action, so far as the investigations have been pushed. The further study of the subject promises interesting developments.

Experimental Organic Chemistry.

By JAMES F. NORRIS, Ph.D., Professor of Chemistry in Vanderbilt University. London and New York: McGraw-Hill Book Company, Inc. 1915. Pp. 215. Price 5*s.* 3*d.* net.

A VERY useful and instructive set of experiments is here outlined and the practical directions given evidence a familiarity with successful laboratory manipulations. The directions cover a wide range of compounds, and yet the book is convenient in size and the type is bold and clear. The opening chapter on laboratory methods is one of the most useful in the book and prepares the student for the subsequent practical work described. It is not often easy to obtain organic compounds in a pure state, or in many instances in good crystalline form, but the author is careful to instruct his readers on those important details which when followed give satisfactory results. The book can be strongly recommended to all those who require a sound knowledge of technique and analytical operations connected with the chemistry of the carbon compounds.

LIBRARY TABLE.

An Irishwoman in China. By Mrs. DE BURGH DALY. London: T. Werner Laurie, Limited. Pp. 294. Price 10*s.* 6*d.* net.—This interesting book is exactly what it purports to be—a simple record of the life of ordinary European residents in China. No doubt such residents may have no very deep knowledge of the history, the psychology, or the racial aspirations and developments of the Chinese. But living among them, and feeling friendly towards them, they get an insight into their domestic manners and ideals which in this case has prompted the production of a book. "An Irishwoman in China" will be of more interest to ordinary people than many works written by experts in history or sociology, and Mrs. De Burgh Daly's chatty pages (if she will forgive the adjective) are well illustrated by photographic reproductions.

The Other Side of the Lantern. By Sir FREDERICK TREVES, Bart., G.C.V.O., C.B., LL.D. London, New York, Toronto, and Melbourne: Cassell and Co., Limited. Pp. 424. Price 2*s.* 6*d.* net.—This is a cheap issue of Sir Frederick Treves's well-known book of travels. The first part gives the author's experiences in the Mediterranean and the Red Sea, the second his impressions of India, the third describes Burmah and Ceylon, the fourth and fifth China and Japan respectively, and the sixth deals briefly with his journey home across America. The sections devoted to India and Japan are the longest, and the former is full of anecdotes illustrating the history and life of the empire. The book has been reprinted many times, and we welcome its appearance in cheap form. The itinerary was neither novel nor adventurous, but the simple record makes instructive reading.

Bussaco: Its Monastery, Battle, and Woods, and its Uses as a Health Resort. By Dr. D. G. DALGADO, of the Academy of Sciences of Lisbon. With two plans and a map. Lisbon: Torres and C.ta 70–74, Rua Nova do Almada. 1916. Pp. 116. Price 2*s.* 6*d.* net.—Dr. Dalgado, who has written some popular books on the climatology of Portugal and the merits of its health resorts, has added to the series an account of Bussaco (sometimes spelt Buçaco), celebrated alike for its ecclesiastical and secular history, and its magnificent woods. Dr. Dalgado claims that the place is "justly reputed as the best inland sylvan resort of low altitude in the whole of the Iberian Peninsula." He devotes a chapter to each of its prominent features, describing the monastery of the monks, the invasion of Portugal by the French and the battle of Bussaco in 1810, the fauna and flora of the neighbourhood, and, lastly, the uses of the thermal waters in cases where high altitudes are contra-indicated.

THE LANCET.

LONDON: SATURDAY, MAY 27, 1916.

Military Service Bill: The Position of Medical Practitioners.

THE Military Service Bill, which is to receive the Royal assent this week, now contains a provision of significance to medical men, and, we think, of great value both to the military authorities and the public at large. On the motion of Lord SANDHURST, on Monday in the House of Lords, the following clause was inserted in the Bill:—

"Regulations made under the second schedule to the principal Act shall provide for the establishment of professional committees to deal with claims for exemption made by duly qualified medical practitioners; and any application made by such a medical practitioner on any ground, other than that of conscientious objection, for a certificate of exemption shall be referred by the tribunal to whom it is made to such a committee in accordance with those regulations; and the recommendation of the committee on the application shall be binding on any tribunal constituted under the principal Act."

The meaning of this clause will be perfectly clear to all our readers, and its insertion accords directly with the course which we have on several occasions suggested might be adopted. Under the scheme of voluntary enrolment a very large body of men pledged themselves to accept commissions in the Royal Army Medical Corps, or, if preferred, in the Royal Naval Medical Service, and to come up if their services should be required. But at the same time a considerable number who might have been expected to enrol abstained from doing so. In some cases exemption from compulsory service has been obtained by practitioners from local tribunals, and it was widely felt that it would have been more satisfactory to the public, to the military authorities, and to the medical men who had enrolled, if the arguments for exemption had been produced to a professional body. It is extremely difficult for any except medical men, who have actual experience of medical practice in its various branches, to decide whether a man best serves the public and the army by remaining in civil practice or by accepting a commission. The difficulties in such cases follow no general plan, and where one man is the master of his fate another will be so in the hands of circumstances that he must obtain assistance before he can venture to enrol. Localities, again, vary in their supply of medical practitioners and in their demand for medical service. It is obvious that the countryside requires a larger percentage of medical men to population than the urban district, because of the time that must be spent, not in visiting the sick, but in traversing the distances between their homes; but, inside this broad differentiation, every locality will have its peculiarities which can only be fully known perhaps to local residents, and their significance can certainly only be appreciated by those who are familiar with the exigencies of medical practice in its various forms. The institution of professional committees to choose which men shall, and which men shall not, be selected for commissions is, we venture to think, a thoroughly wise move. The machinery is in existence and, indeed, has already been working in the indicated direction. We have every reason to hope that by its energies an adequate supply of medical officers will be found for the navy and army, and that they will be chosen with the minimum hardship to the practitioners accepting commissions and with the maximum regard for the wants of the localities. When it was first mooted that application for exemption from compulsory service by a qualified medical man should be made to some professional body more able to consider the problems involved than any tribunal of laymen could possibly be, the objection was raised that it would be difficult to grant privileges to one professional class rather than to another. In the House of Commons, on the consideration of the Lords' amendments, several members took this line, but their arguments had no real force, for the medical man is the only man who is wanted exactly as he is, and who can be taken straight from civilian work, given a commission, and accepted directly into the scheme of a fleet or an army on active service. The public and the Government have seen the justice of this view, and the institution of professional committees has followed.

We learn that the War Office has decided to recognise, under the regulations to be made in fulfilment of the new clause, the three existing professional Committees—viz., the Central Medical War Committee, the Committee of Reference of the Royal College of Physicians of London and the Royal College of Surgeons of England, and the Scottish Medical Service Emergency Committee. These bodies have for some time been utilised by the Government in arranging for the selection of medical men for service as doctors in the naval and military forces of the Crown, and in connexion with the work of the Central Tribunal. The Scottish Medical Service Emergency Committee possesses a detailed knowledge of the medical men coming within its sphere of work which the English body with its larger scope can, perhaps, not claim, but Local War Committees have been established throughout England and Wales in connexion with the Central Medical War Committee, and the work of these numerous bodies has grown in efficiency as the members have become familiar with the problems before them. The Committee of Reference appointed by the Royal Colleges will have referred to it the cases of medical men on the staffs, residential and teaching, of the hospitals and medical schools of London, and any other cases which the Army Council or the Central Medical War Committee may think desirable. We understand that an Order in Council, under the new clause, with the Regulations, will be issued at once.

The Work of the Liquor Control Board.

AMONGST the many painful lessons which we have had to learn during the past two years one of the most obvious, and also one of the most valuable, is the danger of neglecting to deal effectively in time of peace with social evils which in time of war may constitute a grave peril to national efficiency. In a specially clear and forcible manner this lesson has been taught with regard to the drink question, where the problems involved have been under almost constant discussion for many years. Their seriousness from the point of view of the energy and health of the community has been generally recognised; but, nevertheless, no real effort has been made to think out and to carry into effect any complete and reasoned scheme for their solution. The very dangerous consequences of this remissness were apparent at the outbreak of the war, especially in the industrial centres, and it was then speedily realised that what had been postponed in the leisurely days of peace would have to be attempted, if only in a partial and provisional way, in all the turmoil of national emergency. Such conditions are hardly favourable to the successful handling of a complex social problem; and it is, therefore, the more gratifying to find that the methods adopted to meet the special circumstances of the crisis were based on sound principles, for they have been attended with excellent results. These are clearly indicated in the recently published Report of the Central Control Board (Liquor Traffic).

In considering the work of the Control Board it is necessary, as the report points out, to bear in mind that the Act from which the Board derives its authority does not operate automatically for the whole kingdom, or, indeed, for any part of it, until an Order in Council has been made with regard to that part; and it has further to be noted that the object of the Act is to promote the successful prosecution of the war. In accordance with these principles, the Act can only be applied to naval or military centres or to localities where munitions of war are being produced or dealt with in transit, and only when it can be shown that the special measures which it authorises are expedient for the purpose of increasing war efficiency. These limitations led to a very partial use of the Act during the first few months of the Board's existence, but with the rapid development of the military resources of the country, and as a result of the encouraging experience of the value of restrictive regulations, more and more areas have been scheduled, until at the present moment the Act is in force over nearly the whole of Great Britain. While certain drawbacks may be presumed to have attended this gradual and tentative method of dealing with the problem, there were important compensating advantages in the closer adaptation of the Orders to the special circumstances of individual districts, and, above all, in the opportunities which were in this way afforded for judging the effect of new and more or less experimental regulations. The policy of the Board has been fully justified by its results, whether these results are measured by such statistical data as are available or are estimated by the considered judgment of responsible public authorities. Thus, in each area of England and Wales where the Orders of the Board have operated, there has been a most notable decline in convictions for drunkenness. To take a single instance, in the Liverpool area, where the weekly average of such convictions in the first six months of 1915 was 238, and during the four weeks preceding the Board's Order 225, the numbers fell in the following four weeks to an average of 123, and in the first eight weeks of 1916 stood at 128. And reports from the chief constables of the scheduled areas are unanimous in asserting that these figures represent a real diminution in the amount of excessive drinking, as evidenced, *inter alia*, by the marked decrease in the frequency of such minor offences as are ordinarily associated with drunkenness. The same view is emphatically expressed by the naval and military authorities, by Board of Trade officials at the larger ports, and by employers of labour. The evidence furnished by employers, to which the Report draws special attention, goes to show that the work being done in shipyards and munition factories is advanced in two ways by the Orders of the Board. Where bad time-keeping had obtained, the restrictions on the sale of drink have effected improvement in this as in other respects, with a consequent increase of output. Where time-keeping was good before the issue of the Order, industrial efficiency has been in many cases increased and the quality of the work done has been notably better. The later opening of public-houses appears to exercise an important influence in this direction, to judge from the special reference that is made in several reports to the better condition of the men when coming to work. This is a very encouraging fact, as pointing to a decrease in the early morning drinking which is so large a factor in the development of industrial alcoholism. The special restrictions on the sale of spirits seem also to have given good results, though suggestions have been made in some quarters that they may have led to an increase in home drinking. Similar allegations have been made, of course, with regard to the effect of the restrictive regulations as a whole, but they are hardly consistent with the evidence of increased sobriety to which we have just referred, nor do they harmonise very well with the statements, made by the same critics, that these regulations are doing serious and irreparable injury to the liquor trade. So far as any opinion on the matter can be formed as yet, it would appear that the restrictive Orders are attaining their aim, that they are discouraging excessive drinking and drinking at irregular times, while not interfering with the moderate use of alcoholic beverages at meals and after working hours.

The activity of the Control Board has not, however, been confined to purely restrictive measures. On the contrary, it has been from the first a cardinal principle of their policy to recognise that alcoholism must be combated, not merely by limiting the facilities for excessive drinking, but also by

removing the causes of such drinking. Prominent amongst these is the lack of adequate provision of wholesome and palatable refreshment, particularly in working-class districts. To meet this difficulty the Board have used their influence, wherever possible, to encourage the improvement of public-houses in scheduled areas, and they have assisted employers and philanthropic societies in the provision of canteens at which good meals can be obtained at a low charge. In two instances the Board have themselves established industrial canteens. Further—and this is to be noted as of special importance—in certain districts they have taken direct control of the sale and supply of intoxicating liquors. This experiment in the State management of public-houses will be watched with the keenest interest by the steadily growing majority of social reformers who recognise that the drink problem can only be solved by modifying the conditions which lead to the abuse of alcohol, and not by attempting to prevent its reasonable use. The saner view demands that the public-house, instead of being regarded as a mere drinking-shop and a place of more or less evil resort, should be reorganised so as to fulfil more adequately the function which it has exercised in the past as an important centre of the social life of the people. Such a reorganisation can only be effected satisfactorily under some system of disinterested control; and, having regard to the exceptional importance of the liquor trade from the point of view of the public health and security, it is clearly desirable that the controlling authority should be in the hands of the State. If the experience of the Control Board should eventually lead them to advocate this policy, there can be little doubt as to its prompt acceptance by public opinion. Whatever else the war has done, it has shown that the problem of alcoholism must be dealt with thoroughly and resolutely, and that its solution cannot be any longer delayed either by heated prohibitionists or interested traders.

LITERARY INTELLIGENCE.—Messrs. Hilton and Co., Calcutta, have in preparation a new edition of Ghosh's "Materia Medica," edited by Lieutenant-Colonel B. H. Deare, I.M.S.; and of Ghosh and Das's "Hygiene."

NOTIFICATION FEES AND THE ACTION OF THE BRITISH MEDICAL ASSOCIATION.—Mr. N. Bishop Harman has sent us for publication a letter from Dr. F. J. Smith on behalf of the Marylebone Division of the British Medical Association, and his reply to this letter. Dr. Smith asks whether it is true that the deputation from the Association to the Local Government Board admitted that 1s. would be a sufficient fee for the notification of infectious diseases. Unless the answer is the negative he gives notice of raising the question at the annual meeting. Mr. Harman replies in the negative. He states that at their interview with the Government representatives the deputation took up a definite and unassailable stand against the statement of the Retrenchment Committee that the filling of a notification form involved no more than "clerical labour worth one shilling." The deputation pointed out that serious responsibility was involved, and one that laid the doctor open to an action at law in case of a real or alleged error on his part. In the case of the notification of measles the same heavy responsibility did not hold, and as the fee was already on a different basis the Government might logically claim to treat it separately.

Annotations.

"Ne quid nimis."

INCIDENCE OF NOTIFIABLE INFECTIOUS DISEASE IN 1915.

THE incidence of notifiable infectious disease in each sanitary district in England and Wales during the year 1915 is noted and discussed in a report[1] by Dr. Arthur Newsholme, principal medical officer to the Local Government Board. It will be remembered that at the time of the recent Census agreement was reached between the General Register Office and the Local Government Board for the adoption of a common system of statistical returns based on the substitution of administrative for registration districts. One of the results was that in 1911 each of these departments instituted an amended series of reports in relation to infectious diseases. Dr. Newsholme's report reminds us that, in the absence of existing powers for the purpose, the circulation of notification returns has been effected under a "General Order" of the Local Government Board, which imposes upon medical officers of health the duty of transmitting to the Board a statement of the number of infectious attacks reported under the Notification Act during the preceding week. In the course of the week following that to which the summary relates a weekly summary of these returns, giving the cases reported in each sanitary area, is sent by the Board to every contributing health officer. The present systematic interchange of weekly returns is obviously helpful to medical officers of health, especially in widespread rural districts. They are thus informed respecting the occurrence of infectious disease in the several parts of the area for which they are responsible, and are also promptly warned of the approach of infection from contiguous districts under other authorities. As in previous reports, the number of notified cases and the rates per 1000 of population are given in the tables. The populations of many of the districts are very small. Consequently, although for convenience of reference the rates are always given, it is necessary, in judging of their significance in each instance, that the size of the population and the number of cases occurring should be borne in mind. The sickness returns for 1915 are commendably complete; they indicate that a considerable proportion of the cases were imported from abroad, the sanitary areas containing the ports being on that account specially exposed to danger. The seasonal incidence of the more important diseases is set forth in tabular form, special seasonal excess above the mean for the year being expressly noted. During the year 90 small-pox cases were reported (in some cases erroneously); 31 attacks were returned from towns connected with ports. Typhus fever was notified in 45 instances, 37 of which were returned as imported cases by Liverpool. Scarlet fever was less prevalent than in the preceding years. Only in three weeks of October did the attacks exceed the average; they were relatively most numerous in London and least so in the English rural districts. Enteric fever was less prevalent than in any year of the previous four. In nine instances paratyphoid was notified. The county boroughs of Wales were

[1] Reports to the Local Government Board on Public Health and Medical Subjects. New Series. No. 109. London: Wyman. Pp. 57. Price 9d.

exceptionally free from enteric fever. Cerebro-spinal fever showed inordinate prevalence, the attacks being above the average in successive weeks from the middle of February to the end of May. Of the total cases 624 were reported in London, 695 in county boroughs, 787 in smaller urban districts, and 452 in rural areas. Acute poliomyelitis was notified in 517 instances, the attacks being slightly fewer than in the preceding year, and decidedly fewer than in 1913. In proportion to population the smaller boroughs and the rural districts appear to have suffered most and the county boroughs least. In consequence of the further increase in the naval and military forces and of the local concentration of troops in 1915, many notifications of military and naval infectious cases have been sent to civil medical officers of health. These are not included in the returns of the several sanitary areas, but are set forth in a separate table for England and Wales as a whole. This table shows that in the course of the year there were notified to the local sanitary authorities, as occurring in the naval and military services, 1998 cases of scarlet fever, 1183 of diphtheria, 594 of enteric fever, 264 of erysipelas, 930 of cerebro-spinal fever, and 580 of tuberculosis.

THE HISTOLOGY OF DISSEMINATED SCLEROSIS.

Disseminated sclerosis is, next to tabes dorsalis, probably the commonest disease attacking the spinal cord. It is, of course, more than a cord disease, yet in the majority of instances the earliest symptoms whereby it betrays itself are referable to involvement of the medulla spinalis. The histopathology of tabes and its pathogenesis have been definitely determined and solved, whereas the mystery of disseminated sclerosis remains. In a preliminary communication to the Pathological Society of Great Britain and Ireland in July, 1910, the late Dr. Alexander Bruce, of Edinburgh, with Dr. J. W. Dawson, neurological histologist to the Royal College of Physicians' Laboratory, Edinburgh, suggested that disseminated sclerosis was a toxi-infective disease, showed that the plaques were deposited in relation to the distribution of the veins and to the walls of the ventricles, and held that the infiltration was along the lymphatic channels surrounding the veins. The investigation initiated in this fashion by Dr. Alexander Bruce has been continued by Dr. Dawson, and the Transactions of the Royal Society of Edinburgh (Vol. L., Part III., No. 18) contain the finished results. It is a truly superb monograph, of about 220 pages of text, with no fewer than 456 microphotographs and coloured drawings. No such magnificent contribution to the problem of disseminated sclerosis has hitherto appeared in any language; from the histological standpoint it is, so to speak, the last word, and we are satisfied after a careful perusal that as far as histological methods are concerned it is impossible to expect any further results by their employment. Yet Dr. Dawson is candid enough to admit that the actual nature of the disease is still undetermined. In his researches he has made it clear that the sequence of the pathological processes in the disease is somewhat as follows: (1) a commencing degeneration of the myelin sheath and a simultaneous reaction of the glia in the immediately adjacent perivascular tissue; (2) an increasing glia-cell proliferation and a commencing fat-granule-cell formation; (3) the stage of so-called "fat-granule-cell myelitis"; (4) a commencing glia-fibril formation; (5) an advancing and (6) a complete sclerosis. Histological study has given overwhelming evidence that sclerotic areas in the disease arise on the basis of this evolution through a stage of fat-granule-cell formation, and Dr. Dawson concludes that the underlying process is a subacute disseminated encephalo-myelitis which terminates in disseminated areas of actual and complete sclerosis. There is much to favour the view that true disseminated sclerosis is due to a specific morbid agent; other diffuse affections of the central nervous system (arterio-sclerosis, syphilis, acute encephalo-myelitic processes) may give rise to a clinical symptom-complex very like that of disseminated sclerosis; they differ, however, in the characteristic remissions and relapses. According to Dr. Dawson, the anatomical expression of these remissions must naturally be the gradual clearing up of the cell exudation and a sclerosing of the tissue with a retention of the axis-cylinders. All who are interested in the problem of the disease will, of course, ask themselves the question: What is the nature of this postulated specific morbid agent which is the final and determining factor in the process? It is impracticable in a brief annotation to refer to all the arguments adduced by the author; suffice it to say that he feels there is no adequate evidence to distinguish between a microbial and a toxic agent; so far as it goes, the evidence favours the latter hypothesis. How it is conveyed to the nervous system is another of the difficult problems of the disease; in spite of the frequently marked periventricular sclerosis, and recent experimental evidence in favour of the toxicity of the cerebro-spinal fluid, which point to a lymphogenous spread, Dr. Dawson concludes that his own work does not support that view, and states, therefore, that "the causal agent is probably of the nature of a soluble toxin, and it is conveyed to the nervous tissues probably by the blood channel." Why is the action of this postulated toxin restricted to certain areas? The suggestion made is that the restriction is in some way related to the selective action of the toxin in certain areas of the blood-supply, or that unknown factors determine an irregularly distributed paralytic dilatation, with an increased infiltration through the vessel walls. Remissions and relapses necessitate the assumption of the latent presence of the morbid agent in the body—either the intermittent evolution of a toxin, or its accumulation from deficient elimination. A short analysis of the monograph gives but a poor idea of the wealth of material, clinical and pathological, which it contains: the discussions of the problems of the disease are full, critical, and temperate; the work of other observers is constantly referred to, and there is a valuable bibliography. Dr. Dawson's conclusions are put forward modestly and reasonably, and his last sentences may be quoted: "Approximately final answers can, therefore, be given to the questions relating to the nature of the process underlying disseminated sclerosis, to its origin, to the relation of several secondary etiological factors, and to certain aspects of the mode of action of the final causal agent. We are, however, still quite in the dark concerning the nature of this final cause, which determines, anatomically, a process so well defined, and one without any close analogy; and, clinically, a disease which, however variable the symptoms, conceals its characteristic course only temporarily. ..... All that is most important, therefore, still remains for future investigations along bacteriological, serological, and experimental lines, which have recently done so

much to clear up the etiology of other affections of the central nervous system." The research which the late Dr. Bruce initiated, and which Dr. Dawson has so ably carried out, is a monument to tireless industry and patient analysis; it is a splendid contribution to the subject and supplies fresh proof of the very high standard of British neurology.

JAPANESE CHARMS AND AMULETS.

SATAN in the Middle Ages was often conceived of as a fool, who might be deceived by saints endowed with the wisdom of the serpent. He could be frightened away from a house over the doorway of which a holy object or form of words had been suspended, and from the human frame his onslaughts and those of his myrmidons, the evil spirits, might be averted by the use of necklaces or other charms. The same principle is still at work to-day in folk-medicine all the world over, though the spirits whom it is sought to deceive, avert, or exorcise are more often physical than moral tormentors. In Japan the nursery is still protected from the inroads of measles and other infections by means of an inscription over the nursery door stating with the exquisite urbanity characteristic of our far Eastern Allies that "this child is not at home." As often as not the inscription accompanies a true amulet ("hamalet," Arabic for something suspended), which may either represent the absent child (who is really at home all the time) or some spirit more terrible than the unseen visitor. In the Wellcome Historical Medical Museum a most fascinating exhibition is on view, illustrative of "Japanese charms, amulets, votive offerings, and objects of medical interest," among which these nursery notices occupy an important place. One of the exhibits, for instance, is the inky impress of a child's little hand on rice paper, with words to the effect that its owner is gone away, and another delightful one is the carapace of a crab, painted with a horrid face, fit to terrify the devil himself, and accompanied by the same message. Akin to these notices are the charms embodied as toys. A yellow tiger with a wagging head is now said to be a toy, but anciently it was a form of exorcism against palsy and numbness of the limbs. It is a question, indeed, whether in rural Japan, away from European influences, this pictorial tiger is not still used to combat functional paralysis—in our own remote villages analogous charms to ward off evil are in constant use, to the despair or the amusement of the educationist. Dyspeptics of the old school in Japan still place "the beckoning cat" beside them while they eat their curry or raw fish and rice. The cat sits on its hind legs, as cats do, but beckons amiably with a front paw, which is curled over its left eyebrow. Thus it has the power of drawing Acidity, a very terrible demon, out of the eater's body. Mere modern atheists tend to regard the beckoning cat as a mascot to be set up in a shop, like the decorated phallus set up in a less reputable *locale*, in order to draw custom. The moderns aver that the cat is a toy, but the Old Knowledge knows better. A war, indeed, seems to be covertly raging in Japan between the old-fashioned users of amulets and the exponents of the modern spirit. The moderns make out that amulets are toys. Thus the goodly "large coloured toy" called Inu-Hariko, just as Thor's club was called Miolnur, is now described as "a ceremonial present." This is a crimson animal like an elephant, on the back of which are tied a wisp of hemp and a drum-rattle. Pregnancy charms are in great evidence in the Wellcome collection. A picture of Jisu, who resembles Buddha, is to be carried to facilitate childbirth, and among a set of charms for an enceinte woman is a strip of coloured paper to be worn in the pregnancy girdle. This last is known all the world over, and was familiar to the Greeks and Romans. The nuns of a convent in France at this day are said to send to pupils from their school about to be mothers a gay ribbon, inscribed with a prayer, which will ease the pangs of labour. Military amulets are akin to pregnancy charms. The Belt of a Thousand Stitches, each of which must have been put in by a separate sempstress, was worn by a soldier in the Russo-Japanese War, who came through many battles unscathed. Akin to this, again, is the joint of bamboo, pierced with 100 holes, to keep away the hundred-day cough (whooping-cough). The medical portion of this Japanese collection contains some 70 exhibits, from the bulb and stem of garlic, to be hung above doors to avert infections, to the coins which prevent bed-sores when put secretly into a bed, or the "Dosha powder" which relaxes corpses. We suggest to those of our readers who are interested in ethnology, and especially the ancient medical learning, that they should inspect the collection.

SEPTIC PNEUMONIA.

SEPTIC pneumonia—the broncho-pneumonia due to aspiration of septic matter and particles of food in cases of paralysis and coma—is far from uncommon, but has not received much attention or systematic description. In the *Medical Journal of Australia* of March 4th Dr. W. F. Litchfield has published an important paper on the subject based on cases observed in diphtheria and brain diseases associated with coma and after general anæsthesia. He analysed the post-mortem findings in 59 cases of pharyngo-laryngeal diphtheria. In 27 death was due to asphyxia from extension of the membrane into the smaller bronchi. In 9 there was blocking of the air-passages combined with pneumonic patches in the lungs. In 15 death was due to extensive pneumonic consolidation without any membranous formation in the bronchi. In the last group there was membrane more or less detached in the pharynx, larynx, and upper part of the trachea, but without any blocking of the air-passages. In both lungs was extensive consolidation. The pneumonic areas were patchy but often massive. There might be massive consolidation in one lobe with smaller areas in the other lobes. Usually there was purulent bronchitis. In some cases the appearance resembled that of lobar pneumonia. In several cases the pleural surfaces were coated with lymph, and in one case there was pus in the pleural cavity. Microscopically, the chief feature was leucocytic infiltration of the air vesicles. The microbes found in the lungs were chiefly staphylococci and diplococci. In a few cases the diphtheria bacillus was also found. In none of the cases was there any deglutition paralysis. In several cases it was noticed that the membrane overhanging the larynx was in a dirty broken-up condition. This supported the view that the pneumonia was a septic process due to the inhalation of septic particles, which was borne out by the distribution of the pneumonic patches and the bacteriological findings. Dr. Litchfield also analysed the notes of 200 necropsies made by

him at the Royal Prince Alfred Hospital, Sydney, and found that there were 25 cases of acute brain disease. Of these 8 showed well-marked broncho-pneumonia in association with purulent bronchitis. His last observations relate to pneumonia occurring immediately after operations under general anæsthesia. The records of the necropsies at the hospital during 1914–15 showed 8 cases. In several of them the pneumonia was of a scattered type and associated with purulent bronchitis. The three groups of cases have in common a diminished sensibility of the throat and larynx and a depression of the coughing reflex. Further, in many of the cases the muscular apparatus of respiration was embarrassed and in the majority the respiration was oral, with the result that the secretion became inspissated. All these factors contribute to the inhalation of septic particles. The danger is increased when there is a septic or inflammatory condition of the mouth and throat. Septic pneumonia may occur, though less commonly, apart from the conditions mentioned. The indications are to cleanse the throat and mouth, open-air treatment, free stimulation, and sinapisms to the chest wall. But the chief interest lies in prophylaxis. There are many reasons why the mouth should be kept free from sepsis, and these are increased in soporific and paralytic conditions. During any acute illness the mouth and throat should be cleansed frequently and thoroughly. If there is any septic state of the mouth the treatment should be more assiduous, and if the illness be one of those mentioned above the danger of septic pneumonia should be borne in mind. It may be necessary to syringe the pharynx or the nasal passages several times a day. With regard to operations, the advantage of light anæsthesia, which preserves the cough reflex to some extent, and of spinal and local anæsthesia over general anæsthesia, is obvious.

ACCIDENTAL POISONING BY LEAD.

IN another column we publish a note by Mr. H. H. Moyle on "The Odour of Paint as a Cause of Plumbism." He records the cases of a man and his wife who both exhibited symptoms of chronic poisoning by lead. They had been living in a house which had been papered inside and thoroughly painted inside and outside, the whole process extending over about three weeks. The possible sources of poisoning were duly investigated. The man's occupation did not bring him into contact with lead; the examination of the water-supply was negative; both the patients were of temperate habits, and the eating and drinking utensils consisted of the usual china cups and plates and nickel spoons and forks. The paint was apparently of inferior quality, and smelt very strongly and was rather sticky to the touch even eight weeks after being applied. Mr. Moyle admits that he is reluctant to commit himself to the title of his paper, but failing to trace the symptoms to any cause he expresses the opinion that this man and woman, living in a strong atmosphere of paint, especially at night being so close to recently painted walls, were the victims of plumbism from a rather unusual source. In 1852 Dr. J. Alderson mentioned in THE LANCET [1] several cases in which colic and paralysis occurred in persons subjected to the smell of paint; and Sir Thomas Stevenson [2] referred to instances in which these symptoms were noticed in persons who had slept in newly painted rooms. It is difficult to understand, however, how lead could obtain admission into the system in this manner, considering that it is only capable of volatilisation at a high temperature. The number of cases in which cooking utensils have been found to be at fault would indicate a thorough examination of such before a definite conclusion was arrived at that the smell of paint only was the cause of the poisoning. The glaze on cooking utensils may be the source of the trouble. Professor Glaister records two cases in which the cause was a cracked frying-pan, the cracks in which had been soldered with lead, which had been partly dissolved by the fat of ham. Mr. Moyle does not state whether the cooking utensils had been carefully investigated. Nevertheless, his communication is an interesting one as demonstrating the difficulties which may arise in attempting to trace the source of the poison when symptoms of plumbism present themselves.

[1] THE LANCET, vol. ii., 1852, p. 391.
[2] "On Poisons," second edition, p. 485.

TREATMENT OF SYPHILIS: THE GIFT OF THE GROCERS' COMPANY TO THE LONDON HOSPITAL.

THE International Medical Congress of 1913 and the appointment of a Royal Commission to inquire nto venereal diseases focussed public attention on the treatment of these conditions in a remarkable way, and the issue of a sensible report has confirmed the interest now being manifested. A valuable step towards the better provision of opportunities for treatment was taken in February, 1914, when the Grocers' Company offered to defray the cost of building and equipping a ward at the London Hospital for the treatment of syphilis. It was then determined by the authorities to add another floor to the existing isolation block of the hospital, and this step, owing to structural difficulties in the work, cost £10,000. The building was delayed on account of the war, but was completed by the end of 1915. Financial stringency led to a decision to delay opening the ward until the end of the war, but owing to the great increase in the number of patients presenting themselves for treatment the House Committee found it necessary to open the new department on March 1st last, the ward being worked in connexion with the skin department of the London Hospital, as it is intended at first to make special study of the treatment of syphilis in the acutely infective stages. The ward, which is admirably constructed, contains eight beds for men and eight for women, all the patients being in separate rooms. A well-equipped laboratory for clinical investigation, together with bathrooms and suitable accommodation for nurses, makes the whole building a model for its purpose.

ON Thursday, June 22nd, at 4.30 P.M., the Royal Society's Croonian Lecture will be delivered by Professor S. J. Hickson, F.R.S., on "Evolution and Symmetry in the Order of the Sea-pens."

THE Cavendish lecture of the West London Medico-Chirurgical Society will be delivered on Friday, June 23rd, by Sir John Bland-Sutton, at the West London Hospital.

THE Regius Professorship of Surgery in Dublin University, left vacant by the death of Sir Charles Ball, has been filled by the appointment of Mr. Edward H. Taylor, M.D. Dub., F.R.C.S. Irel., professor of surgery in Trinity College, Dublin.

NOTES ON CAMP SANITATION.

BY ADAM WHITE, M.B., CH.B., D.T.M. & H. EDIN., D.P.H. CAMB.,
CAPTAIN, R.A.M.C. (T.F.); OFFICER COMMANDING SANITARY SECTION.

IT has been suggested that it would be useful if the articles on Sanitation in Billets and Camps contained in THE LANCET of Jan. 1st and 8th, 1916, were supplemented by reference to some matters relating to camp sanitation which were touched upon only briefly or not mentioned at all in those communications. The following notes are intended to act as the supplement alluded to above. The points to be dealt with relate mostly to hutment camps.

Floor and Cubic Space.

The provision of adequate floor and cubic space and of proper means for ventilation in barracks and huts has been dealt with at length in Regulations, and during the present period of embodiment these closely related subjects have been, from time to time, the subject of War Office Letters and Command and other Orders. With regard to floor space, that generally allowed is 40 square feet per man, the cubic allowance being 400 feet. The huts in most hutment camps have a superficial floor area of 1200 square feet (being 20 feet broad and 60 feet long) and a total cubic content approximately of 12,000 cubic feet. The proper number of men to be housed in each of these huts is therefore 30. It is inadvisable that this number should be exceeded, except for short periods and in the presence of grave necessity, as an examination of such huts at night when all the bed-boards are in position for occupation demonstrates that the above floor space allowance, though probably sufficient under existing conditions, is certainly not on a too liberal scale. It is essential that the space available should be used to the greatest advantage by ensuring that the beds are distributed evenly along and at right angles to the walls of the hut. The N.C.O. in charge of the hut should be held responsible that this arrangement is maintained throughout the night. The placing of two or more bed-boards in close contiguity and the pooling of blankets by two or more men should be prohibited as being for every reason profoundly unsatisfactory.

Ventilation.

As the cubic space allowance per head in these huts is only 400 cubic feet it is of great importance that special attention should be paid to their ventilation. If the respiratory impurity is not to be allowed to rise above 0·2 part of CO_2 per 1000 (a generally accepted standard) each individual in the hut will require 3000 cubic feet of air per hour. Since the cubic allowance per head is only 400 feet it is obvious that the air in the hut will require to be changed from seven to eight times per hour if the delivery of fresh air is to be on the above scale. It is generally held that in inhabited houses in this country the ventilation openings should be of such a size as to provide for each individual an inlet space of 24 square inches and an outlet space of the same size. It is doubtful if this provision is sufficient in the case we are dealing with—i.e., in the case of huts having a cubic capacity of only 400 cubic feet per unit, and experience has shown that under such circumstances the inlet and outlet space per individual should not be less than 40 square inches. If means are taken to secure adequate distribution of the entering air and to secure the delivery of the air at a proper level, no hardship from draughts is experienced in connexion with this liberal provision of ventilation space.

With regard to the type of ventilation openings to be adopted, the more elaborate varieties should be avoided and preference should be given to simple and efficient expedients; for elaboration in this matter, in addition to being expensive, generally means the provision of space for the accommodation of dirt. It is also advisable that the openings should, as far as is possible, be so placed and of such a nature that it will be impossible, or at all events difficult, for the individuals inhabiting the huts to place the apertures out of action. With the object of legislating against such endeavours to close ventilating openings a special order should be issued against the practice, and patrols should be placed on duty to enforce compliance. This applies especially when windows are relied upon as ventilating openings. In practice it is found that the best ventilating apertures are open windows, louvred openings in the gable ends of the huts or at the roof-ridge, and spaces surrounding the stove-pipes. The last-named expedient is applicable only when the pipes pass through the roof. The great advantage of the use of windows as ventilators is that the ventilating apertures can be varied in size, in number, and in situation according to the state of the weather, &c., and when windows are constructed on the hopper principle (as is the case in most army huts) they make ideal ventilators. Their disadvantage is that they are too readily under the control of the men, but this can be met by the provision of permanent hopper checks and by proper supervision. The average hopper window in an army hut, when open to the full extent permitted by the hopper, provides an air space of 400 square inches. If the hut contains 30 men, and each man is to have an air-entry space of 40 square inches and an air-exit space of similar extent, the total area for all openings will be 2400 square inches. This can be provided by opening six windows, each of which provides 400 square inches of space. When properly disposed three of these windows will act as air entries and three as air exits.

Though it has been stated by an eminent authority that in order to ensure proper distribution of the entering fresh air each individual inlet opening should be not larger than 60 square inches, experience has shown that quite excellent results are obtained when such openings are 400 square inches in extent, as specified above. It is necessary, however, to exercise care in selecting the windows which are to be opened, and the best results are obtained when those chosen are the three end ones on each side of the hut, one series of three being diagonally opposite the other series. In ventilating huts by windows we rely very specially upon the perflating and aspirating action of the wind, and this is another reason why care must be exercised in selecting the windows which are to be used as ventilators. It has been shown that when proper care is taken and due supervision is exercised huts of the type already described can be efficiently ventilated by the use of windows alone, and in the complete absence of special ventilating openings, such as louvred ridges and ventilating spaces round stove-pipes. Indeed, some authorities consider that cross ventilation by windows alone is the ideal type of ventilation, and that the provision of accessory openings disturbs the general scheme of air movement in the room or hut, causes eddies, and leads to inefficient distribution. The amount of ventilation opening specified above is that required as a minimum at all seasons of the year; in summer all the windows of the huts should be kept open to their full extent.

Louvred openings in the gable ends of the huts possess the advantage that they are, comparatively speaking, difficult to put out of action. They should be placed one in each gable end, and their size should vary from 200 to 400 square inches, according to the other means of ventilation provided. Ventilating spaces around stove-pipes which pass through the roof act as air-extraction shafts (at least when fires are burning) and in the presence of such spaces all other openings situate below the level of the ridge of the roof act as air entries. Such stoves are generally placed in the middle of the hut, and as the current of air within the hut will be towards the situation of the stove the proper points for the opening of windows which are to act as air entries are at the four corners of the hut.

Incineration of Night-soil.

In camps in which bucket latrines are installed the most satisfactory method of dealing with the bucket contents is incineration. If incineration is impracticable the night-soil should be disposed of in shallow trenches, similar to those used for the burial of sludge at many sewage works (e.g., those at Hatfield). In this case the site chosen for the trenches should be not less than half a mile from and to leeward of the camp, and it should be of suitable size and levels to permit of efficient trenching. Mere dumping of night-soil is objectionable from every point of view.

To work efficiently, incinerators must be of such a type and must be so operated as to make for rapid and thorough destruction of the night-soil with the formation of only simple gaseous products of combustion. Incineration must not be accompanied by the emission of charred particles and ammoniacal and other odorous gases, for in this event

grave nuisance arises. Closed destructors, in which it is possible to produce a fierce fire before the introduction of the night-soil, which are provided with suitable highly heated baffles to intercept the products of combustion as these leave the fire-grate, and which possess relatively tall chimneys (not less than 10 feet), produce the best results.

Technique for Incinerators.

In addition to the dry camp refuse which is available it is generally advisable to have about 1 cwt. of ordinary fuel (coal or wood) per unit destructor for 1000 men. A fire is started with ordinary fuel and dry camp refuse, and only when this is going strongly and the inside of the incinerator is well heated may the introduction of fæcal matter be commenced. Urine and liquor cresolis saponatus contained in the buckets should be drained off into gullies, or, if these are not available, into specially constructed soakage pits. The fæcal matter remaining in the buckets may then be tipped into the destructor; but better results are obtained if the fæces are previously well mixed with dry camp refuse or with sawdust to such an extent as to make the resulting mixture of the consistence of a thick paste. Each bucket of fæcal matter must be fed to the destructor regularly and systematically when the matter already introduced has been destroyed, the fire meanwhile being kept at its maximum intensity by the introduction of ordinary fuel and dry refuse from time to time as may be required. The whole secret of efficiency is contained in intelligent stoking and avoidance of choking the fire by the too rapid introduction of undiluted fæcal matter.

Disposal of Urine and Waste Water in Hutted Camps.

In many hutted camps in which bucket latrines have been installed land treatment—frequently in the form of downward filtration—of the liquid sewage (which in such cases consists of urine and ablution water, and which contains no fæcal matter) has been adopted. As a preliminary, generally the solids of the sewage are partially removed by grease traps and by mechanical settlement in tanks. This system of treatment as applied has not given uniformly satisfactory results, and some of the more obvious causes for the comparative lack of success which has been experienced may now be briefly discussed.

In the first place it has been assumed by some that a sewage which contains no fæcal matter and which consists only of urine and ablution water is weaker than an ordinary domestic sewage, and will therefore be more easy to treat. This idea is contrary to practical experience, for the water used to flush water-closets produces a dilution of the sewage which is out of proportion to the solid matter added in the form of fæces. Therefore, in the absence of water-carriage, the sewage is more concentrated, and, moreover, the solids (grease, soap, vegetable remnants) present in such a sewage are difficult to deal with, for they do not lend themselves readily to removal by sedimentation or liquefaction. The above assumption has led to the insufficient provision of means for the removal of suspended solids and to cramping in the matter of the provision of land area.

The means for the removal of suspended solids generally take the form of grease traps in connexion with cookhouses and ablution places and of sedimentation tanks placed in proximity to the land filtration or irrigation areas. As a rule these traps and tanks are not large enough and are not cleaned out sufficiently often. The traps should be cleaned once a day and the tanks (in an average case) once a week. Tanks should be of such a size as to hold from half to three-quarters of the daily flow and should be in duplicate in order to facilitate sludging. The area of land required for treating the sewage will vary with the character of the soil and subsoil, according to whether irrigation or filtration is the method adopted, and according to the degree of perfection of the removal of suspended solids, but it should not be less than will result in a ratio of 150 to 500 of population per acre. Other causes of unsatisfactory results in the land treatment of camp sewage are lack of allowance for the fact that the bulk of the sewage comes away in two to three large gushes, which occur at the same time each day; unsuitability as regards levels and character of the land; the non-provision of underdrains in cases in which these are necessary; the improper setting of carriers and distributers; and lack of adequate care and treatment of the ground, with the result that it becomes "sick" or "sour," and the sewage ponds on the surface and does not pass away.

In cases in which land irrigation is the system adopted under-drainage may or may not be necessary, according to circumstances, but in the case of filtration the provision of under-drains is nearly always necessary. Such drains should be laid at an average depth of 4 to 6 feet from the surface, and should be orientated transversely to the general slope of the ground. In like manner the sewage distributers should be laid at right angles to, and not parallel with, the ground slope. Sickening of the soil and ponding of sewage can be prevented by the removal of an adequate amount of the suspended solids through the medium of tank treatment, by properly regulating the periods of rest and the dose of sewage allocated to each plot of land, by the breaking up of layers of "pan," and by proper care of the ground surface. As has been shown by Purvis, McHattie, and Fisher, cropping is unnecessary and scarification and turning of the surface soil followed by short periods of rest prevent the formation of "sick" areas.

Prevention of Scabies and Verminous Infestation.

Scabies and pediculosis are diseases which for a variety of reasons are specially liable to spread among soldiers once one or other of the specific parasites has been introduced from without. Their prevention obviously concerns camp sanitation closely. Introduction of either disease may be avoided, or recognised early enough to prevent wide dissemination, by special medical inspections of men newly joined and of men who have returned from leave, and by regular frequent routine inspections of whole units. The rapidity of spread is most marked in quarters which are overcrowded and in which cleanliness both of premises and personnel is not insisted on, and it therefore follows that the provision of adequate space and the paying of due attention to details of regular ablution are of the highest importance in this connexion. But there are certain circumstances or conditions of affairs which militate against the success of preventive schemes conceived on the lines indicated above. These conditions are the lack of attention to cleanliness, &c., which is often in evidence in guard detention-rooms, the mixing of blankets belonging to different individuals, the re-issue of blankets which have not been washed or disinfected, and the discharge of men who have been suffering from either of these diseases to their units before the disease has been thoroughly cured or with their kits imperfectly disinfected.

There is some reason to believe that under the unsatisfactory hygienic conditions which exist in many of them these guard detention-rooms may constitute what may be termed endemic foci of scabies and verminous infestation. This can be all the more readily understood when one remembers that it is, generally speaking, from among the lower types that the inhabitants of guard detention-rooms are drawn. Much greater attention should be paid to the inspection and cleansing of such rooms and of the individuals confined therein. In one camp the systematic disinfection of the entire kits of all men discharged from detention was followed by a sensible diminution in the incidence of scabies and verminous infestation.

It is highly probable that the mixing of blankets belonging to different men, and the re-issue without washing or disinfection of blankets which have been taken into store, materially aid the spread of body parasites. Blankets should not be allowed to become mixed, and precautions should be taken to ensure that each man always has the same blankets. Numbering blankets and men and penalising men found in possession of blankets bearing numbers not their own would prevent interchange. All used blankets taken into store should be washed or disinfected before re-issue. It is of the highest importance that all medical officers should satisfy themselves before the patient's discharge that his infectivity has disappeared and that his entire kit has been properly disinfected.

ROYAL MEDICAL BENEVOLENT FUND.

AT the last meeting of the committee, held on May 9th, 20 cases were considered and £195 voted to 16 of the applicants. The following is a summary of the cases relieved:—

L.S.A. Lond. who had practised at Hereford. Has now joined the R.A.M.C., and his inclusive pay is 18*s.* 6*d.* per day. He pays 17*s.* 6*d.* per week for a cottage. He gave up a practice worth £800 a year. Is married and has one son, aged 16, at school at Dover, where the fees are £120. Applicant requires help to finish the education of his son.

The boy has gained two scholarships worth £30, and if the Fund could provide £30 he could manage. His income is not sufficient to meet his expenses, which he puts down at—son £120, wife £100, self £100. Case sent by the Professional Classes War Relief Council. Voted £10 and referred to the Guild.—Widow, aged 60, of L.R.C.S. Irel. who practised at Little Sutton and died in 190[illegible]. Applicant received about £25 per annum from property, which was mortgaged, but owing to this being recalled and the rate of interest on the new one increased and heavy repairs it has taken the proceeds (£25). She has also taken in boarders, but has not been successful. This with the high price of food and failing health she finds herself in financial difficulties. Rent paid £42 11s. per annum. Voted £10.—Widow, aged 56, of M.R.C.S. Eng. who practised at Bradworthy and died in 1908. Applicant has lost all her late husband left through bad investments. Has now lost her mental faculties. Has two daughters, aged 30 and 21, both governesses, who earn together £90, and one son, aged 26, single, an engineer with £160 per annum, and who provides a home for his mother, and the daughters give her £32 10s. Friends give £39. Referred to the Guild.—Widow, aged 70, of M.R.C.S. Eng. who practised at Liverpool and died in 1883. After the death of her husband she earned a living by taking in lodgers. One of her sons qualified as a medical man, and she kept house for him, but owing mainly to overwork through the war he died early this year, and all he left was an insurance of £250 which went to his mother. The applicant proposes to try and take lodgers again, but for the present has her son's house rent, £71 10s., on her hands. Voted £10.—Widow, aged 57, of L.R.C.P. Edin. who practised at Blackburn and died in 1902. Used to earn a living by looking after children while their parents worked in the cotton mills, but owing to ill-health has had to give this up. Has one daughter, aged 19, a shop assistant, who earns 15s. per week. This is their sole income apart from the Fund. The Manchester Branch of the Guild speaks well of this case and helps a little. Previous relief, twice, £24. Voted £15 in 12 instalments.—Daughter, aged 69, of M.R.C.S. Eng. who practised at Cranbrook and died in 1890. Applicant is not very bright mentally and quite unable to work. She has an annuity from another charity, £30. She has to pay £1 per week for board and lodging, and as the landlady with whom she lived has just died she may have to pay more. She is a difficult person to get on with. Previous grants have been paid to Dr. Alex. Walker, of Peterborough. Previous relief, five times, £60. Voted £12 in 12 instalments.—Daughter, aged 54, of M.R.C.S. Eng., L.R.C.P. Dub. who practised at Rickmansworth and died in 1901. Applicant was left quite unprovided for and suffers from arthritis and fibrosis, &c. Only income £30 from a relative. Pays £13 for rent of one room. Relieved three times, £30. Voted £10 in two instalments and referred to the Guild.—Widow, aged 62, of M.D., C.M. McGill who practised at Waterloo, Liverpool, and died in 1914. Owing to the very long illness of her late husband he was unable to provide for his family. There are five children, ages 30–38. The two sons are abroad and unable to help, and of the daughters, one is suffering from tuberculous kidney, another is dyspeptic, and the eldest is the only wage-earner. She has £91 per year, £29 paid in rent. Relieved once, £18. Voted £18 in 12 instalments and referred to the Guild.—Daughter, aged 69, of L.S.A. Lond. who practised at Christchurch and died in 1880. Has a life interest in an old house at Christchurch, but owing to increasing expenses does not benefit from it. Lived with a sister, recently dead, who had an artists' pension of £80, which went into the general fund. Applicant earns a little as an artist, but finds it very difficult to obtain commissions at present, and her eyesight is failing. Relieved once, £18. Voted £18 in 12 instalments.—Daughter, aged 44, of M.D. Aberd. who practised at Glasgow and in Australia and died in 1891. Applicant was without any means; she trained as a masseuse, and was able to earn her own living until her health became impaired two years ago, and was then only able to take occasional work. Has recently had diphtheria and is now recovering, and hopes to work again soon. Relieved twice, £20. Voted £10.—Daughter, aged 60, of M.R.C.S. Eng. who practised at Blackheath and died in 1880. Applicant mentally deficient, and has to be provided for by a sister who has an interest in a girls' school, and has a difficulty in making ends meet. The help previously given has been greatly appreciated. Strongly recommended by the Guild. Relieved eight times, £69. Voted £10 in two instalments.—Widow, aged 40, of L.R.C.P. & S. Edin. who practised at Cliffoney, co. Sligo, and died in 1912. After her husband's death applicant opened a sweet shop in a town in Scotland, and managed to get on until she had to undergo an operation in May, 1915. The Fund then made her a grant of £10. In April, 1916, her shop was blown up by a bomb from a Zeppelin, and all her stock and furniture destroyed, and she was not insured. Now wants help to re-establish herself. Postponed for further inquiries.—Daughter, aged 61, of L.S.A. Lond. who practised at Cheadle and died in 1874. Was left totally unprovided for, and owing to ill-health has never been able to undertake permanent work. Earns a few pounds a year by sewing, and a friend provides £25 per annum. Rent 4s. 9d. per week. Relieved ten times, £88. Voted £12 in 12 instalments.—Daughter, aged 65, of M.D. St. And. who practised at Dover and died in 1881. Has endeavoured to earn a living by conducting a Servants' Agency, but during the last two years, and especially since the war, has been very unsuccessful. She has also been in the habit of taking in some boarders, but these have ceased. Relieved twice, £20. Voted £10.—Widow, aged 49, of L.S.A. Lond. who practised at Leyton and died in 1914. Was left without any means with five young daughters. On the death of her husband it was discovered that the practice was much involved and had to be sold to pay the creditors. Her brother, a medical man, bought the practice with a view of helping his sister and her children, but owing to the high salary that had to be paid to a locum and the increased cost of drugs the practice was not paying. Help wanted towards the education of the children. Previous relief, three times, £25. Voted £10.—M.R.C.S. Eng., married, who had practised at Manchester and London. Owing to ill-health unable to earn anything and has lost all his savings. Only income an Old Age Pension. Relieved twice, £19 10s. Voted £18 in 12 instalments and referred to the Guild.—Wife, aged 50, deserted by her husband who is an M.R.C.S. Eng. Has no means and is a chronic invalid. Has one daughter, aged 22, who nurses her mother and has a few day-school pupils, from whom she receives 6s. 6d. per week, of which 5s. has to be paid in rent. Relieved three times, £36. Voted £12 in 12 instalments.

Subscriptions may be sent to the honorary treasurer, Dr. Samuel West, 11, Chandos-street, Cavendish-square, London, W.

WESTERN CANADA.

(FROM OUR OWN CORRESPONDENT.)

Registration of Nurses.

A BILL has recently been introduced into the Legislature of British Columbia to divide the nurses of the province into two classes—registered graduate nurses (R.G.N.) and registered household nurses. It does not forbid other women to practise as nurses for hire, but provides considerable penalties for fraudulent assumption of the titles above. The registered graduate nurse is to be a graduate of an approved training school and must have passed an examination in elementary bacteriology, materia medica, anatomy and physiology, dietetics, medical nursing (including contagious diseases), surgical nursing (including gynæcology), obstetrical nursing, and children's diseases. The household nurse passes an *oral* examination in practical nursing (which will show her *manual* dexterity, the Bill says), also a written examination on subjects relating to practical nursing care. A recent amendment to the Bill provides that wherever a word signifies the female sex the male shall also be included, so that male nurses are also to be regulated. The intention is to enable the public to decide what nurses are well educated and of good character. The Bill in its present form is crude and hasty and hardly likely to become law.

The Weiss Urinary Reaction in Tuberculosis.

At the April meeting of the Victoria (B.C.) Medical Society, Fleet-Surgeon Home, pathologist to the Provincial Hospital at Victoria, read a note on the Weiss reaction in the urine of tuberculous patients. The reaction is carried out by diluting 10 c.c. of filtered urine with 20 c.c. of water. 15 c.c. of the dilution are placed in each of two test tubes, to one of which are added three drops of a 1:1000 solution of permanganate of potash. A tuberculous urine is supposed to give a characteristic orange-amber colour. In 80 urines of known tuberculous patients there was no change in 30, a trace in 21, definite in 11, and a marked change in 18. In 42 urines from the general wards 14 showed definite change, but one proved to be from a case of tuberculous hip disease, and none of these reactions was marked. 22½ per cent. of the urines of tuberculous cases gave a marked Weiss reaction, but none of the urines of non-tuberculous cases. Those cases which gave marked Weiss reactions had, all of them, many tubercle bacilli in the sputum when it was examined the week before, and every fatal case examined showed a marked reaction. A diazo reaction had only been found once in 100 urines from tuberculous patients. So far the observations indicate that a marked Weiss reaction is characteristic of tuberculosis and suggests a bad prognosis.

May 7th.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

The Treatment of Cerebro-spinal Meningitis.

THE existence of cerebro-spinal meningitis due to other germs than the meningococcus, and the fear of serum accidents seem to have caused hesitation in regard to the serotherapy of epidemic cerebro-spinal meningitis. Accordingly M. Nobécourt, M. Jurie des Camiers, and M. Tournier have, at the Medical Society of the Hospitals, endeavoured to introduce some precision in the conduct of antimeningococcic serotherapy, utilising observations made by them at the infectious diseases hospitals to which they are attached. They conclude that when a patient presents the symptoms of meningitis lumbar puncture should be done at once, the quantity of fluid withdrawn not being limited when it flows spontaneously, provided pains in the head do not appear. Lumbar puncture does not allow of delay when the symptoms indicate cerebro-spinal meningitis – sudden onset, vomiting, cephalalgia, Kernig's sign, and stiffness of neck. If the cerebro-spinal fluid is turbid, 30 c.c. of antimeningococcic serum should be injected and the treatment continued even if bacteriological examination does not reveal the meningococcus—that is, provided no other germs are found. On the next day is made a second puncture, and a second injection of 30 c.c. or 20 c.c. If the fluid is less turbid and if the

symptoms amend two days elapse before the third puncture. If not, it is done in 24 hours. Again 20 c.c. are injected, unless the fluid is clear. The fourth puncture is done after two, three, or four days if the turbidity lessens and improvement continues. When the fluid is clear no more serum is injected, but 10 c.c. if the turbidity is much less. If the third puncture has not revealed a favourable state of the fluid, punctures are made every two days, on each occasion 20 c.c. of serum being injected. This is continued until the fluid is clearer. Then the punctures and the injections are made every three or four days, stopping on the fluid being clear. In following this technique anaphylaxis is not to be feared. Frequently the injections provoke in the following 12 or 36 hours an exacerbation of the symptoms—cephalalgia, rhachialgia, and stiffness of neck. This constitutes neither an indication to resort to puncture nor a contraindication to continue the treatment. In short, the variations in the cerebro-spinal fluid are a more precise guide than the clinical symptoms in antimeningococcic serotherapy. This method gives good results in children as well as in adults, the doses of the serum being much the same at all ages, except in babies. These doses have been as well tolerated by soldiers of 18 to 20 as by those of 30 to 40 years.

Wine from a Psychological Point of View.

Before the Academy of Medicine M. Ch. Fiessinger has spoken recently of the use of wine. Activating the internal secretions, wine, he said, stimulates the association of ideas and excites the affective states. Mental originality is more constantly renewed, he declared, and impulses of the heart and of active goodness are more often in evidence, among moderate drinkers of wine (30 to 60 centilitres a day). Of the conditions which have fashioned the genius of the French mind the habitual use of wine has been, he thought, most important in a happy formation. M. Linossier remarked that it might be dangerous to make before the academy a eulogy of wine, which might be an excuse for those who did not take small quantities. M. Maurice de Fleury said that for neurasthenic patients he had renounced giving wine owing to the results he was obtaining, and that he had become a partisan of the use of water alone. M. Fiessinger said, in reply to M. Linossier, that practising at Vichy, he saw especially large drinkers of wine; and in answer to M. de Fleury that neurasthenics are generally patients bearing wine very badly. If they take bismuth, the use of wine causes them no inconvenience.

May 20th.

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

Deputy Surgeon-General D. J. P. McNabb has been appointed Deputy Director-General, and Fleet-Surgeon J. F. Hall Assistant Director-General.

The following appointments have been made:—Staff-Surgeon H. M. Braithwaite to *Foresight*, and Temporary Surgeon C. R. T. Thomson to *Pembroke*.

ROYAL ARMY MEDICAL CORPS.

A. J. Cleveland to be temporary Major whilst employed at the Norfolk War Hospital.

Temporary Lieutenant J. H. Porter to be temporary Captain.

J. W. Nunn to be temporary Honorary Captain whilst serving with No. 1 British Red Cross Hospital.

Temporary Lieutenant S. G. Trail relinquishes his commission.

Canadian Army Medical Corps: Majors to be temporary Lieutenant-Colonels: E. G. Davis and E. J. Williams. To be temporary Lieutenant-Colonels: Lieutenant-Colonel W. A. Scott, A. W. Tanner, C. A. Peters, and S. W. Hewetson. To be temporary Majors: T. McLeask, A. T. Bazin, and F. H. Mayhood. To be Temporary Captains: Lieutenant C. A. Langmaid, Lieutenant L. L. Stauffer, C. H. C. Bell, C. D. Hewett, H. W. Wadge, C. W. Johnston, A. A. Drinnan, J. T. Mulvey, H. H. Eyres, J. C. Tull, F. J. Tees, D. Waterston, A. Ross, G. O. Wood, C. G. Gunn, J. A. Reid, R. T. Washburn, H. G. Chisholm, A. W. Park, R. Sanson, J. J. Jamieson, A. Lawther, C. K. Dowson, D. B. Lazier, and L. B. Graham.

INDIAN MEDICAL SERVICE.

It was recently announced in the press that after the open competitive examination held last July for admission to the Indian Medical Service no similar examination would be held during the continuance of the war, but that such appointments as might be required to meet the absolutely indispensable needs of the service would be made by nomination by the Secretary of State. To assist him in making these appointments, which, as already announced, will be limited in number to the absolutely indispensable needs of the service, Mr. Chamberlain has appointed a Selection Committee who will summon and interview such applicants as may appear to be *prima facie* suitable, and make recommendations for appointment. Applications for appointment should be addressed to the Secretary of the Military Department, India Office, Whitehall, S.W., and should contain concise particulars of the applicant's medical degrees and career. Applicants must be over 21 and under 32 years of age at the time of application. Particulars regarding pay, promotion, &c., in the Service can be obtained from the Secretary, Military Department.

The King has approved the promotion of the following officers:—Captains to be Majors: C. C. C. Shaw, J. W. H. Babington, and A. S. M. Peebles.

SPECIAL RESERVE OF OFFICERS.

Royal Army Medical Corps.

J. A. Crawford and G. Morris, lieutenants on probation, are confirmed in their rank.

TERRITORIAL FORCE.

Army Medical Services.

Lieutenant-Colonel (temporary Colonel) T. F. Dewar, from A.D.M.S., Central Force, to be A.D.M.S., Home Defence.

Captain A. H. Hogarth, from Attached to Units other than Medical Units, to be D.A.D.M.S., Welsh Division, and Captain H. F. Wilkin, from Attached to Units other than Medical Units, to be D.A.D.M.S., Northumbrian Division.

Royal Army Medical Corps.

South Midland Mounted Brigade Field Ambulance: Lieutenant E. P. Dawes to be Captain.

London Field Ambulance: Major A. W. French, from South Western Mounted Brigade Field Ambulance, to be Major. S. Henry to be Lieutenant.

Northern General Hospital: Captain (temporary Major) L. R. Braithwaite is seconded for duty with a General Hospital. Captain H. J. Macvean is seconded for duty with a General Hospital.

Welsh Field Ambulance: Major T. Donovan to be temporary Lieutenant-Colonel whilst commanding a Field Ambulance. Lieutenant J. E. Dunbar to be Captain.

London Sanitary Company: Lieutenant R. H. Murray to be Captain. N. Gebbie to be Lieutenant.

East Lancs. Field Ambulance: Lieutenant (temporary Captain) F. Jeeves to be Captain. Lieutenant (temporary Captain) W. P. Ferguson to be Captain.

West Lancs. Division Sanitary Section: Lieutenant W. H. Hill to be Captain.

South Midland Casualty Clearing Station: Captain C. F. Walters, from Southern General Hospital, to be Captain.

Lowland Mounted Brigade Field Ambulance: Captain (temporary Major) R. Y. Anderson to be Major.

Attached to Units other than Medical Units.—Captain A. C. O. Brown, from South Midland Mounted Brigade Field Ambulance, and Lieutenant W. E. Lee to be Captains. To be Lieutenants: J. Fraser, J. Wilson, and J. F. Russell (late Lieutenant, Royal Welsh Fusiliers).

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

IN the 96 English and Welsh towns with populations exceeding 50,000 persons at the last Census, 8440 births and 4777 deaths were registered during the week ended Saturday, May 13th. The annual rate of mortality in these towns, which had been 16·4, 17·0, and 15·2 per 1000 in the three preceding weeks, further fell in the week under notice to 14·4 per 1000 of their aggregate civil population estimated at 17,312,295 persons for the year 1915. During the first six weeks of the current quarter the mean annual death-rate in these towns averaged 16·4, against 16·2 per 1000 in London. Among the several towns the death-rate during the week ranged from 5·5 in Eastbourne, 7·1 in Ilford, 7·4 in Wimbledon, 8·4 in West Bromwich, and 8·5 in Enfield and in Oxford, to 21·3 in Stoke-on-Trent, 21·7 in Oldham, 23·3 in Gateshead, 23·6 in Dudley, and 25·3 in Sunderland.

The 4777 deaths from all causes were 263 fewer than in the previous week, and included 352, which were referred to the principal epidemic diseases, against 431 and 383 in the two preceding weeks. Of these 362 deaths, 125 resulted from whooping-cough, 124 from measles, 48 from infantile diarrhœal diseases, 39 from diphtheria, 18 from scarlet fever, 7 from enteric fever, and 1 from small-pox. The mean annual death-rate from these diseases was equal to 1·1

per 1000, and coincided with that recorded in the previous week. The deaths attributed to whooping-cough, which had been 146, 175, and 139 in the three preceding weeks, further fell to 125, and caused the highest annual death-rates of 1·4 in West Ham, in Southend-on-Sea, and in Warrington, 1·5 in Burnley, 1·8 in Sunderland, and 1·9 in Lincoln. The deaths referred to measles, which had been 121, 119, and 120 in the three preceding weeks, slightly rose to 124; the highest recorded rates from this cause were 1·6 in West Ham, 1·8 in Tottenham, 2·2 in Grimsby, 2·5 in Stoke-on-Trent, and 4·1 in Dudley. The fatal cases of diarrhœa and enteritis (among infants under 2 years), which had been 66, 60, and 59 in the three preceding weeks, further declined to 48, and included 18 in London and 7 in Birmingham. The deaths attributed to diphtheria, which had declined from 65 to 43 in the four preceding weeks, further fell to 39, of which 9 occurred in London and 4 each in West Ham and Liverpool. The deaths referred to scarlet fever, which had been 22, 24, and 27 in the three preceding weeks, numbered 18, and included 4 in London and 2 each in Birmingham, Coventry, and Liverpool. The 7 fatal cases of enteric fever were equal to the average in the earlier weeks of the quarter, but showed no excess in any individual town. The death from small-pox was registered in Cardiff.

The number of scarlet fever patients under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, which had declined from 1778 to 1594 at the end of the five preceding weeks, further fell to 1549 on May 13th; 167 new cases were admitted during the week, against 191, 179, and 153 in the three preceding weeks. These hospitals also contained on May 13th 1240 cases of diphtheria, 233 of measles, 227 of whooping-cough, 30 of enteric fever, and 1 of small-pox. The 1113 deaths from all causes in London showed a decline of 128 compared with the previous week, and corresponded to an annual death-rate of 13·5 per 1000. The deaths referred to diseases of the respiratory system, which had steadily declined from 405 to 247 in the eight preceding weeks, further fell to 182 in the week under notice.

Of the 4777 deaths from all causes in the 96 towns, 144 resulted from violence, 324 were the subject of coroners' inquests, and 1450 occurred in public institutions. The causes of 44, or 0·9 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest. All the causes of death were duly certified in London and in its 14 suburban districts, in Sheffield, Leeds, Bristol, Hull, and in 58 other smaller towns. Of the 44 uncertified causes, 9 were registered in Birmingham, 7 in Liverpool, 4 each in Stoke-on-Trent and Preston, and 2 each in Southend-on-Sea, Leicester, Manchester, Gateshead, and Tynemouth.

In the 96 large English and Welsh towns with populations exceeding 50,000 persons at the last Census 8810 births and 4673 deaths were registered during the week ended Saturday, May 20th. The annual rate of mortality in these towns, which had been 17·0, 15·2, and 14·4 per 1000 in the three preceding weeks, further fell in the week under notice to 14·1 per 1000 of their aggregate civil population, estimated at 17,312,295 persons for the year 1915. During the first seven weeks of the current quarter the mean annual death-rate in these towns averaged 16·0, against 15·8 per 1000 in London. During the week the death-rate ranged from 4·0 in Swindon, 6·0 in Hastings, 6·5 in Ilford, 6·6 in Eastbourne, and 6·8 in Enfield, to 20·4 in Salford, 20·7 in Sunderland, 20·9 in St. Helens, 22·3 in Wigan, and 22·9 in Gateshead.

The 4673 deaths from all causes were 104 below the number in the previous week, and included 352 which were referred to the principal epidemic diseases, against numbers declining from 431 to 362 in the three preceding weeks. Of these 352 deaths, 128 resulted from whooping-cough, 103 from measles, 62 from infantile diarrhœal diseases, 38 from diphtheria, 15 from scarlet fever, and 6 from enteric fever, but not one from small-pox. The annual death-rate from these diseases was equal to 1·1 per 1000, and coincided with that recorded in each of the two preceding weeks. The deaths attributed to whooping-cough, which had been 175, 139, and 125 in the three preceding weeks, slightly rose to 128, and caused the highest annual death-rates of 1·4 in Sunderland, 1·6 in Manchester, 1·8 in Acton, and 3·9 in Newport (Mon.). The deaths referred to measles, which had been 119, 120, and 124 in the three preceding weeks, fell to 103; the highest recorded death-rates from this cause were 1·2 in West Ham, 1·4 in Stoke-on-Trent and in Salford, and 2·1 in Dudley. The fatal cases of diarrhœa and enteritis (among infants under 2 years), which had declined from 66 to 48 in the four preceding weeks, rose to 62, and included 21 in London, 7 in Birmingham, 5 in Manchester, and 4 in Sheffield. The deaths attributed to diphtheria, which had declined from 65 to 39 in the five preceding weeks, numbered 38, of which 6 occurred in London and 4 in Liverpool. The deaths referred to scarlet fever, which had been 24, 17, and 18 in the three preceding weeks, fell to 15, and included 3 in Liverpool. The 6 fatal cases of enteric fever, of which 2 were registered in Preston, were slightly below the average in the earlier weeks of the quarter.

The number of scarlet fever patients under treatment in the Metropolitan Asylum Hospitals and the London Fever Hospital, which had steadily declined from 1778 to 1549 at the end of the six preceding weeks, further fell to 1444 on Saturday last; 139 new cases were admitted during the week, against 179, 153, and 167 in the three preceding weeks. These hospitals also contained on Saturday last 1225 cases of diphtheria, 214 of whooping-cough, 196 of measles, 32 of enteric fever, and 2 of small-pox. The 1098 deaths from all causes in London were 16 fewer than in the previous week, and corresponded to an annual death-rate of 13·3 per 1000. The deaths referred to diseases of the respiratory system, which had declined from 405 to 182 in the nine preceding weeks, further fell to 160 in the week under notice.

Of the 4673 deaths from all causes in the 96 towns, 152 resulted from violence, 333 were the subject of coroners' inquests, and 1419 occurred in public institutions. The causes of 36, or 0·8 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest. All the causes of death were duly certified in London and in its 14 suburban districts, in Sheffield, Leeds, Bristol, Bradford, Newcastle-on-Tyne, and in 63 other smaller towns. Of the 36 uncertified causes, 13 were registered in Birmingham, 7 in Gateshead, 4 in Liverpool, and 2 each in Manchester and Preston.

HEALTH OF SCOTCH TOWNS.

In the 16 largest Scotch towns with an aggregate population estimated at 2,372,000 persons at the middle of this year, 1188 births and 681 deaths were registered during the week ended Saturday, May 20th. The annual rate of mortality in these towns, which had steadily declined from 20·5 to 14·8 per 1000 in the six preceding weeks, rose to 15·0 per 1000 in the week under notice. During the first seven weeks of the current quarter the mean annual death-rate averaged 16·9, against 16·0 per 1000 in the large English towns. Among the several towns the death-rate during the week ranged from 6·1 in Falkirk, 6·9 in Clydebank, and 8·7 in Motherwell, to 17·8 in Kirkcaldy, 18·7 in Ayr, and 24·4 in Perth.

The 681 deaths from all causes were 8 in excess of the number in the previous week, and included 53 which were referred to the principal epidemic diseases, against 57 and 56 in the two preceding weeks. Of these 53 deaths, 25 resulted from measles, 17 from whooping-cough, 4 each from scarlet fever and infantile diarrhœal diseases, and 3 from diphtheria, but not one from enteric fever or from small-pox. The annual death-rate from these diseases was equal to 1·2, against 1·1 per 1000 in the large English towns. The deaths attributed to measles, which had been 28, 27, and 32 in the three preceding weeks, fell to 25, and included 21 in Glasgow and 2 in Paisley. The deaths referred to whooping-cough, which had been 11 in each of the three preceding weeks, rose to 17, of which 8 were recorded in Glasgow and 2 in Kirkcaldy. The fatal cases of scarlet fever, which had been 10, 5, and 9 in the three preceding weeks, fell to 4, and included 2 in Glasgow. The deaths of infants (under 2 years) from diarrhœa and enteritis, which had been 11, 12, and 4 in the three preceding weeks, were again 4 last week, but showed no excess in any town. The 3 fatal cases of diphtheria were 3 below the average in the earlier weeks of the quarter, and were registered in Glasgow, Paisley, and Perth respectively.

The deaths referred to diseases of the respiratory system, which had been 159, 103, and 103 in the three preceding weeks, rose to 106 in the week under notice, but were 11 below the number registered in the corresponding week of last year. The deaths from violence numbered 19, against 29 and 31 in the two preceding weeks.

HEALTH OF IRISH TOWNS.

In the registration area of Dublin 293 births and 235 deaths were registered during the week ended Saturday, May 20th. The deaths corresponded to an annual rate of 30·0 per 1000, or excluding the 47 deaths resulting from the recent disturbances to 24·0, against 13·3 in London and 15·9 per 1000 in Glasgow.

Of the 235 deaths of all ages, 32 related to infants under 1 year and 43 to persons aged 65 years and upwards. The deaths from the principal epidemic diseases numbered 14, of which 5 were referred to measles, 4 to infantile diarrhœal diseases, 3 to enteric fever, and 1 each to whooping-cough and diphtheria.

The causes of 27 deaths were uncertified, while 9 others were the subject of coroners' inquests; 89 deaths occurred in public institutions.

During the same period 217 births and 129 deaths were registered in the city of Belfast. The deaths were equal to an annual death-rate of 16·7, or 0·5 per 1000 below that recorded in the previous week, and included 16 of infants under 1 year and 22 of persons aged 65 years and upwards. The deaths from the principal epidemic diseases numbered

17, of which 9 resulted from whooping-cough, 3 from measles, 2 each from scarlet fever and infantile diarrhœa and 1 from enteric fever.

The causes of 2 deaths were uncertified and 5 others were the subject of coroner's inquests, while 30 occurred in public institutions.

VITAL STATISTICS OF LONDON DURING APRIL, 1916.

In the accompanying table will be found summarised complete statistics relating to sickness and mortality in the City of London and in each of the metropolitan boroughs. With regard to the notified cases of infectious diseases, it appears that the number of persons reported to be suffering from one or other of the 10 diseases specified in the table was equal to an annual rate of 5·3 per 1000 of the civil population, estimated at 4,310,030 persons; in the three preceding months the rates were 6·5, 6·0, and 5·6 per 1000 respectively. The lowest rates last month were recorded in Kensington, Stoke Newington, Holborn, the City of London, Camberwell, and Lewisham; and the highest rates in Hampstead, Finsbury, Shoreditch, Bethnal Green, and Stepney. The prevalence of scarlet fever showed a further decline from that recorded in other recent months; among the several metropolitan boroughs this disease was proportionally most prevalent in Hampstead, St. Pancras, Finsbury, Shoreditch, Bethnal Green, and Stepney. The Metropolitan Asylums Hospitals contained 1608 scarlet fever patients at the end of last month, against 2157, 1956, and 1735 at the end of the three preceding months; the weekly admissions averaged 190, against 249, 210, and 208 in the three preceding months. Diphtheria also was again less prevalent than it had been in other recent months; the greatest proportional prevalence of this disease was recorded in Chelsea, Finsbury, Shoreditch, Bethnal Green, and Stepney. The number of diphtheria patients under treatment in the Metropolitan Asylums Hospitals, which had been 1538 and 1417 at the end of the two preceding months, had further declined to 1331 at the end of last month; the weekly admissions during the month averaged 149, against 198 and 160 in the two preceding months. Enteric fever was slightly more prevalent in April than it had been in March; of the 33 cases notified during the month, 5 belonged to Hackney, 4 to St. Pancras, and 3 each to Stepney and Woolwich. There were 39 enteric fever patients under treatment in the Metropolitan Asylums Hospitals at the end of last month, against 50 and 46 at the end of the two preceding months; the weekly admissions averaged 7 last month, and corresponded with the weekly average for each of the three preceding months. Erysipelas was proportionally most prevalent in St. Marylebone, Hackney, Finsbury, Shoreditch, Bethnal Green, Southwark, and Bermondsey. The 25 cases of puerperal fever notified during the month included 5 in Lambeth, 4 in Kensington, and 2 each in Fulham, Wandsworth, and Woolwich. The 77 cases of cerebro-spinal meningitis included 10 in Lambeth, 8 in Stepney, 7 in Islington, and 4 each in Hampstead, Finsbury, Southwark, and Battersea; the 2 cases notified as poliomyelitis belonged respectively to St. Pancras and Islington.

The mortality statistics in the table relate to the deaths of persons actually belonging to the several boroughs, the deaths occurring in institutions having been distributed among the boroughs in which the deceased persons had previously resided. During the four weeks ending April 29th the deaths of 5689 London residents were registered, equal to an annual rate of 17·2 per 1000, against 18·1 per 1000 in the preceding month. The death-rates last month ranged from 12·3 in Hampstead, 12·7 in the City of London, 13·8 in Wandsworth, 14·3 in Lewisham, 15·5 in Lambeth, and 15·6 in Woolwich, to 19·1 in Kensington, 19·2 in Islington, 20·1 in Chelsea, 20·6 in Holborn, 21·0 in Finsbury, 21·7 in Southwark, and 25·0 in Shoreditch. The 5689 deaths from all causes included 376 which were referred to the principal infectious diseases; of these, 102 resulted from measles, 18 from scarlet fever, 50 from diphtheria, 141 from whooping-cough, 2 from enteric fever, and 63 from diarrhœa and enteritis among children under 2 years of age. The 102 deaths from measles showed a decline of 160 from the corrected average number in the corresponding weeks of the five preceding years; this disease was proportionally most fatal last month in Hammersmith, Islington, Shoreditch, Stepney, Poplar, Deptford, and Greenwich. The 18 cases of scarlet fever were equal to the corrected average number, and included 3 in Camberwell, and 2 each in Shoreditch, Stepney,

ANALYSIS OF SICKNESS AND MORTALITY STATISTICS IN LONDON DURING APRIL, 1916.

(Specially compiled for THE LANCET.)

CITIES AND BOROUGHS.	Estimated civil population, 1915.	NOTIFIED CASES OF INFECTIOUS DISEASE.											DEATHS FROM PRINCIPAL INFECTIOUS DISEASES.								Deaths from all causes.	Death-rate per 1000 living.
		Small-pox.	Scarlet fever.	Diphtheria.*	Typhus fever.	Enteric fever.	Other continued fevers.	Puerperal fever.	Erysipelas.	Cerebro-spinal meningitis.	Poliomyelitis.	Total.	Annual rate per 1000 persons living.	Small-pox.	Measles.	Scarlet fever.	Diphtheria.*	Whooping-cough.	Enteric fever.	Diarrhœa and enteritis (under 2 years)	Total.	Annual rate per 1000 persons living.		
LONDON	4,310,030	—	765	583	—	33	2	25	260	77	2	1747	5·3	—	102	18	50	141	2	63	376	1·1	5689	17·2
West Districts.																								
Paddington	131,397	—	19	24	—	2	—	1	7	2	—	55	5·4	—	—	1	2	4	—	6	13	1·3	180	17·9
Kensington	155,795	—	25	7	—	1	—	4	7	2	—	46	3·8	—	1	—	—	1	—	—	2	0·2	228	19·1
Hammersmith	118,559	—	20	16	—	—	—	—	5	1	—	42	4·6	—	4	1	3	1	—	—	9	1·0	154	16·9
Fulham	151,161	—	30	28	—	—	—	2	9	2	—	71	6·1	—	3	1	2	5	—	—	11	0·9	183	15·8
Chelsea	58,421	—	10	14	—	1	—	—	1	2	—	28	6·2	—	1	—	1	1	—	2	5	1·1	90	20·1
City of Westminster ...	135,104	—	21	12	—	1	—	—	8	2	—	44	4·2	—	3	—	—	2	—	3	8	0·8	163	15·7
North Districts.																								
St. Marylebone	100,260	—	8	16	—	—	—	—	9	1	—	34	4·4	—	—	—	1	3	—	—	4	0·5	134	17·4
Hampstead	81,760	—	34	8	—	—	—	1	3	4	—	50	8·0	—	—	—	1	—	—	—	1	0·2	77	12·3
St. Pancras	209,322	—	47	20	—	4	—	1	13	1	1	87	5·7	—	2	—	2	8	—	2	14	0·9	256	16·7
Islington	316,242	—	54	36	—	—	—	—	10	7	1	108	4·5	—	26	1	4	14	1	5	51	2·1	466	19·2
Stoke Newington... ...	50,527	—	5	4	—	1	—	1	—	3	—	14	3·6	—	—	—	1	—	—	—	1	0·3	66	17·0
Hackney	217,883	—	38	26	—	5	1	1	20	1	—	92	5·5	—	5	—	2	9	—	3	19	1·1	267	16·0
Central Districts.																								
Holborn	40,405	—	3	2	—	—	—	—	1	1	—	7	2·3	—	—	—	1	—	—	1	2	0·6	64	20·6
Finsbury	76,915	—	28	17	—	—	—	1	7	4	—	57	9·7	—	2	—	1	1	—	2	6	1·0	124	21·0
City of London	19,461	—	3	2	—	—	—	—	—	—	—	5	3·3	—	—	—	—	1	—	—	1	0·7	19	12·7
East Districts.																								
Shoreditch	103,627	—	28	35	—	2	—	1	14	1	—	81	10·2	—	9	2	1	6	—	4	22	2·8	199	25·0
Bethnal Green	120,207	—	32	27	—	2	—	—	10	1	—	72	7·8	—	1	—	1	14	—	3	19	2·1	151	16·4
Stepney	265,731	—	68	61	—	3	—	1	17	8	—	158	7·8	—	9	2	3	6	—	3	23	1·1	356	17·5
Poplar	156,247	—	19	25	—	1	—	—	9	1	—	55	4·6	—	6	1	4	10	—	4	25	2·1	219	18·3
South Districts.																								
Southwark	179,424	—	26	23	—	—	—	—	19	4	—	72	5·2	—	3	2	1	8	—	6	20	1·5	299	21·7
Bermondsey	117,188	—	20	17	—	—	1	—	11	3	—	52	5·8	—	1	—	1	3	—	3	8	0·9	168	18·7
Lambeth	284,188	—	34	22	—	—	—	5	14	10	—	85	3·9	—	4	—	4	10	—	5	23	1·1	338	15·5
Battersea	161,945	—	28	31	—	1	—	1	8	4	—	73	5·9	—	1	—	—	7	—	3	11	0·9	220	17·7
Wandsworth	312,249	—	56	34	—	2	—	2	18	3	—	115	4·8	—	2	2	4	6	—	2	16	0·7	331	13·8
Camberwell	254,385	—	31	26	—	2	—	—	8	1	—	68	3·5	—	1	3	1	10	—	3	18	0·9	328	16·8
Deptford	110,299	—	23	14	—	—	—	1	9	3	—	50	5·9	—	5	—	1	1	—	—	7	0·8	142	16·8
Greenwich	96,385	—	21	15	—	2	—	—	6	2	—	46	6·2	—	9	1	4	2	—	2	18	2·4	132	17·9
Lewisham	164,438	—	17	9	—	—	—	—	9	2	—	37	2·9	—	2	—	2	2	—	1	7	0·6	180	14·3
Woolwich	129,506	—	17	12	—	3	—	2	8	1	—	43	4·3	—	2	1	2	6	1	—	12	1·2	155	15·6
Port of London	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

* Including membranous croup.

Southwark, and Wandsworth. The 50 deaths from diphtheria were 11 in excess of the corrected average number. The greatest proportional mortality from this disease was recorded in Hammersmith, Poplar, and Greenwich. The 141 deaths from whooping-cough were 8 above the corrected average number, the highest death-rates from this disease being recorded in Islington, Shoreditch, Bethnal Green, Poplar, Southwark, and Woolwich. The 2 deaths from enteric fever were 4 below the corrected average number, and belonged to Islington and Woolwich respectively. The 63 deaths from diarrhœa and enteritis among children under 2 years of age were equal to the corrected average number; the greatest proportional mortality from this cause was recorded in Paddington, the City of Westminster, Finsbury, Shoreditch, Bethnal Green, Poplar, and Southwark. In conclusion, it may be stated that the aggregate mortality in London last month from the principal infectious diseases was 27·8 per cent. below the average.

Obituary.

ARNOLD WILLIAM WARRINGTON LEA, B.SC. VICT., M.D., B.S. LOND., F.R.C.S. ENG.,

CONSULTING SURGEON, NORTHERN HOSPITAL FOR WOMEN AND CHILDREN, MANCHESTER, ETC.

Dr. Arnold Lea, who died at Manchester on May 7th, in his forty-ninth year, was the eldest son of Mr. Edward Lea, of Sandbach. Educated at Parkhurst School, Buxton, he had a brilliant career as a medical student at the Owens College, Manchester, obtaining two gold medals in the London M.B. examination and honours in the B.S. Later on he took his degree as doctor, became a Fellow of the Royal College of Surgeons of England, and graduated in science in the Victoria University. After holding resident appointments in Manchester and at the Queen Charlotte's Hospital, London, he was appointed lecturer on midwifery and diseases of women at the Owens College, and soon after was elected to the honorary staff of St. Mary's Hospitals and of the Northern Hospital for Women and Children in Manchester.

Holding these public appointments Arnold Lea rapidly acquired an extensive consulting practice and took a leading part in the gynæcological world. He published a large number of papers connected with his special work, the most important being a monograph on "Puerperal Infection" published in 1910. It is probable that the long hours and the lack of sleep associated with the production of this book in the midst of a busy surgical practice were contributory factors to the serious organic nervous disease which finally proved fatal.

It may be truly said that Arnold Lea's chief interest in life was his work, which was to him his hobby. Not very keen on the usual outdoor sports, although in his earlier professional days he was devoted to rock climbing in Switzerland and our own Lake district, he yet had many interests outside his work. Sociology, literature, and travelling always appealed to him, and his scanty leisure was generally spent on the continent exploring new countries and gaining fresh experiences. He possessed to a marked degree the faculty of friendship, and to a wide circle of practitioners who sought his assistance he was much more than the specialist—he was a friend and a brother. He married in 1913 Miss Lillias Thompson McTaggart.

An intimate friend writes of him:—"Before the cloud settled down over his personality during the last year or two of his life the friendship of Arnold Lea was a precious thing. In him the springs of character welled up pure and strong, and hence came the impulse of his thirst for knowledge and passion for action in all the varied fields of his mind and work. It is difficult now to recall how many and varied those interests really were, and how in some fashion or other the interest was never suffered to exhaust itself in mere thought but always issued in appropriate action, whether in the formation of a new society, as the University Sociological Society, or in his consideration for the feelings and even the weaknesses of others. His was a delightful social personality, abounding in talk of all kinds, incident, anecdote, argument, and a rich fund of humour underlying all and ever coming to the surface even in serious talk, and including the ability to laugh heartily at himself. Of more serious things, James's 'Religious Experiences' appealed strongly to his penetrating mind, in which difficulties were realised clearly enough, though he never doubted that natural forces were everywhere subservient to supernatural."

Correspondence.

"Audi alteram partem."

METEOROLOGY AND MEAN SOLAR TIME.

To the Editor of THE LANCET.

SIR,—In accordance with the provisions of the Summer Time Act Greenwich mean time will continue to be used for all meteorological observations and publications, so that no discontinuity will be caused during the period when summer time is in force. But besides the observations which are made by regular observers many meteorological phenomena of various kinds are from time to time recorded or reported, and it is highly desirable that there should be no ambiguity in these reports which are often of much interest and importance. The Council of the Royal Meteorological Society desire to draw attention to the necessity of stating precisely the time of occurrence in all such cases and whether the times quoted refer to Greenwich mean time or to summer time, since the omission of this information may render the record of the phenomenon useless for meteorological purposes.

Such occasional observations form a valuable addition to those which are made at the permanent observing stations and supplement them usefully; it is therefore essential that they should be recorded with precision.

I am, Sir, yours faithfully,

H. G. LYONS,
President, Royal Meteorological Society.

May 19th, 1916.

SOME PERFORATIONS AT OR NEAR THE PYLORUS:

NOTES OF A CASE WHICH OCCURRED IN A BATTLE-CRUISER IN THE NORTH SEA.

To the Editor of THE LANCET.

SIR,—Mr. W. H. Battle's interesting and important observations on this subject, published in THE LANCET of April 29th, prompt me to send you the following notes:—

On Oct. 1st, 1914, a single man, aged 31, a private, R.M.A., joined H.M.S. *New Zealand*. He was seen in the sick-bay the same day, in the ordinary routine of the ship, and as he was obviously ill he was at once put on the sick list and turned in in the bay. He was very emaciated, and the superficial veins of his legs and abdomen were dilated. He gave a long history of abdominal pain and of vomiting directly after meals. These attacks occurred about every six weeks and lasted three or four days. He had one attack of hæmatemesis two years before. He was a teetotaler. Between Oct 1st and 5th he had slight abdominal pain, but was otherwise fairly comfortable in his bunk. The ship was now at sea engaged in battle practice with the rest of the battle-cruiser squadron. It was decided to send the man ashore to hospital directly on our return. On Oct. 5th, at 10 A.M., he vomited two pints of cocoa which he had taken at 7 A.M., and a third pint was vomited at 1 P.M. The sea was not rough. The upper part of his abdomen was tender and resistant. The liver dullness was normal. No enlarged glands were detected. The heart, lungs, and urine were normal. It was considered that he had a carcinoma of his pylorus. He was extremely emaciated and ill, and it is a remarkable thing that he so escaped medical observation as to be sent to join the ship. On Oct. 6th, at 6 P.M., sudden very violent pain in the abdomen seized him as he lay quietly in his bunk. He was in agony, dripping with perspiration. Ruptured stomach was diagnosed and operation determined upon. No further examination was attempted at the moment. At 7 P.M. he was still in extreme pain, in spite of morphine, and a little chloroform was administered. At 7.30 P.M. we were ready to operate. A rapid examination at this time demonstrated abolition of liver dullness, and movable dullness in the flanks was determined. Laparotomy through a mid-line incision above the umbilicus was performed. Gas and stomach contents escaped from the peritoneal incision. The extreme pyloric end of the stomach was found to be enormously hypertrophied, being considerably larger than a golf ball and of almost cartilaginous consistence. In the front of this mass and towards the lesser curvature was a rupture one and a half inches long. The walls of the cleft were nearly half an inch thick. The stomach was not particularly dilated. There were many adhesions between the liver and the mass. A probe passed through the rent entirely failed to enter the pyloric canal. No enlarged glands were detected, but it was still considered that we were dealing with malignant disease. The rent was brought together with mattress sutures, with purse-string sutures superimposed. The difficulties were considerable. Posterior gastro-jejunostomy was abandoned

after the stomach had been brought through the transverse meso-colon, as much because we had no proper clamp as because of the patient's condition. Staff-Surgeon J. R. A. Clark-Hall, who was giving the ether, and giving it very ably, considered that no time should be lost in closing the abdomen. This was done as rapidly as possible, a tube being passed down to the site of rupture. A second tube was passed through a stab incision into the pelvis. Owing to an oversight, only straight needles could be found, and these only were used throughout! The Fowler position was adopted, and rectal salines administered. On Oct. 7th salines and nutrients were given alternately by enema every two and a half hours. On Oct. 8th there was some hiccough, but the general condition was good. The Admiral had been unable to send the ship back to the base, as we had urged on Oct. 6th, and now we had to decide whether we should carry on with our gastro-jejunostomy. It will be recalled that we had failed to find any opening into the pyloric canal from the stomach. On Oct. 9th the man vomited three-quarters of a pint of very acid bile-stained fluid.

On Oct. 10th his condition was so satisfactory when I took him on board the *Rohilla* that I had some slight difficulty in persuading Staff-Surgeon T. C. Litler Jones, R.N.V.R., to operate further. I gained my point, however, possibly by urging that I had forgotten to sew up the hole which was made in the transverse meso-colon. Anterior gastro-jejunostomy through a lateral incision was performed that afternoon, and we were able to see that there were no traces whatever of peritoneal infection, and also that the mass alluded to above had diminished to about half its former size. The site of the rupture was entirely satisfactory. The incisions, upper and lower, were closed. I did not see the man again, but Staff-Surgeon Litler Jones wrote saying that he died on Oct. 15th. The necropsy showed no evidence of general peritonitis, as I understand him, but there was a "pelvic abscess."

I am indebted to Fleet-Surgeon C. H. Rock, R.N., for much kindness in connexion with this case and the operation. It will be admitted that efficient work in preparing for grave operations at sea during war, and able nursing afterwards, redound very greatly to the credit of the sick-berth staff, and also to the organising qualities of the senior medical officer.—I am, Sir, yours faithfully,

HILDRED CARLILL, M.A., M.D. Cantab., &c.,
Temporary Surgeon, R.N.; Neurologist, Royal Naval Hospital, Haslar.

THE INFLUENCE OF SEASON UPON THE BIRTH-RATE.

To the Editor of THE LANCET.

SIR,—At a meeting of the Historical Section of the Royal Society of Medicine in December last Dr. Raymond Crawfurd, dealing with superstitions concerning menstruation,[1] discussed the influence of season upon the sexual functions of the human species. He showed some evidence for the view that there was originally a single sexual season in the year, comparable to that of the pairing of many animals, and that this had been extended under the operation of civilisation and domesticity until little variation during the 12 months was left.

The returns of births should illustrate this point. By the courtesy of the Registrar-General's Superintendent of Statistics I have obtained some information of interest. The statistics of births in England and Wales are, unfortunately, of but little use for this purpose on account of the delay, up to six weeks, allowed by statute prior to registration; moreover, they are only tabulated for the quarters of the year. The returns of other European countries in which prompt registration is exacted—I am told that the limit in France is three days—are of more value, and they are given in some fulness in the admirable French official report, "Statistique Internationale du Mouvement de la Population" (Paris, vol. ii., 1913). These returns generally agree in showing an excess of births above the average in the early months of the year, especially in February and March. The number falls during the summer, but there is a curious rise in most countries for the month of September; after this it declines sharply to the lowest point, which is commonly reached in November, and then rises again to reach the maximum point early in the following year. The extent of the variations differs much in different lands; thus, generally speaking, they are slight, that is, the number of births is more uniform throughout the year, in northern civilised countries, such as Scandinavia, France, and Germany; whilst the variations are larger, showing a marked seasonal curve, in the south and east of Europe—in Spain, for instance, and the Balkan States. Looking back over the records of 30 or 40 years, one notes a general tendency for the variations to become less and the curve to become more uniform. The following countries may be taken in illustration. In each case the months of lowest and highest birth registrations are given, the figures stated being proportional to the mean monthly number taken as 1000; the period chosen comprises the years 1906–10.

Germany ...	952 (Nov.)	...	1046 (March)
Sweden ...	946 (Nov.)	...	1074 (Sept.)
France ...	924 (Nov. and Dec.)	...	1090 (March)
Italy	919 (June and Dec.)	...	1120 (Feb.)
Japan... ...	741 (June)	...	1392 (March)
Serbia ...	584 (Dec.)	...	1336 (Feb.)

The greater influence of season in states of less advanced civilisation or of warmer climate is apparent from these figures. The conceptions corresponding to the births will have taken place about nine months earlier. We find, therefore, a period from April to July, especially May and June, when conceptions were more frequent in all countries, together with a second rise in frequency in the month of December. The former period is that of the spring and early summer, when under the influence of increased sunlight and warmer temperature organic life of all kinds is more active.

Two factors in the returns should receive some separate notice—the influence of season on marriages and on illegitimate births respectively. With regard to the former, the number of marriages registered reaches a maximum in many countries about April or May. In other lands the influence of religious prescription completely alters the curve, certain festal seasons of the year having become chosen by long custom for the solemnization of the rite. In Serbia, where this is perhaps most strongly rooted, there were in the years 1906–10 but four marriages in December, in proportion to 3660 in November. In countries where religious festivals have less place the curve for marriages follows in a general way that for births, and, like it, has tended to show less and less variation from a uniform mean as time has gone on. The returns of illegitimate births show seasonal variations similar to those of the total births, but they are more strongly marked. It is easy to understand that conceptions which are the result of unregulated impulses are the more likely to vary with seasonal conditions. The proportion of illegitimate births is, of course, much larger in some countries than in others; where such births are numerous they exaggerate the seasonal curve of the total births. The greater number of births in the month of September, that is, of conceptions in December, remains to be accounted for, and it is attributed with much probability to the Christmas season. The September rise is especially high in Sweden, Norway, and Germany, where Christmas festivities are much observed.

As to the influence of civilisation, Is there a well-marked sexual season among savage peoples? Dr. Crawfurd made some references to the Esquimaux and to the natives of Queensland, indicating that such a season had been observed among these tribes in the spring. Prinzing has entered with much care into the subject in his "Handbuch der Medizinischen Statistik" (1906), and states that no distinct pairing time is found in uncivilised races, although they show the same seasonal variations found in the civilised, and to a much greater degree. Prinzing's summaries of births for each month in the year, compiled from the returns of many countries over a period of more than 70 years, agree substantially with the French tables already quoted in the general curve displayed.

It is to be regretted that in England and Wales we are still behind the other nations in our slack method of registering births. There seems to be no reason why this should not be speeded up by an amending statute. The returns of births registered in the four quarters of the year since 1838, as published in the last annual report of the Registrar-General, show the following features. At first the maximum number was recorded in the first quarter, indicating a majority of conceptions in the second quarter, April to June. As the years went on the maximum was shifted on to the two next quarters, where the latest returns place it, indicating the more frequent conceptions in the two later quarters, or, allowing for delay in registration, from June to November. Had we details for the several months we might see some probable explanation. The steady diminution in the number of illegitimate births may affect the results shown. These births were in England and

[1] THE LANCET, Dec. 18th, 1915, p. 1335.

Wales, in 1870–72, in the proportion of 17 annually to 1000 unmarried and widowed females of ages 15 to 45 years; in 1906–10 the proportion had fallen to 8·1.

The subject of seasonal influence on the birth-rate has not escaped the attention of statisticians from the time of Moreau (1778) onward; Bertillon is amongst those who have written upon it. Upon the whole the evidence makes it probable that man, or his ancestor, had once a single pairing season in the spring of the year, and that in process of ages under the conditions of civilisation and domesticity the sexual activities became independent of season. These activities still show marks of the influence of the seasons, marks which are stronger in the case of less civilised nations, in warmer climates, and outside of wedlock; and slighter in the case of the more civilised, in colder temperatures, and amongst the married —I am, Sir, yours faithfully,

Devonshire-place, W., May 16th, 1916. R. HINGSTON FOX.

TARTAR EMETIC IN THE TREATMENT OF CEREBRO-SPINAL FEVER.

To the Editor of THE LANCET.

SIR,—The publication by Sir Leonard Rogers of his success in kala-azar by the intravenous injection of tartar emetic led me to think that it might be useful in cerebro-spinal fever also. Half a grain administered in two cases here has produced very beneficial results. A daily remitting temperature, which, as is so often the case, had existed for some weeks, fell to normal in 60 hours, and has remained so, and headache has disappeared, with much of the vertebral stiffness removed. Two other cases appear to be going in the same direction. I write this thus early in the experiment in hopes that others may try the remedy while cases are still available.

I am, Sir, yours faithfully,

SHEFFIELD NEAVE,

Ipswich, May 23rd, 1916. Temporary Captain, R.A.M.C.

TYPHOID FEVER OR WHAT?

To the Editor of THE LANCET.

SIR,—Whether typhoid fever or not, the case to which the following note refers was in some respects so anomalous as to appear worthy of a brief record.

The patient, an active business man, aged 43, after partaking of jugged hare at a restaurant on Jan. 4th last, was unable to get the taste out of his mouth for several days. On Jan. 12th he felt seriously unwell and had a slight rise of temperature. From Jan. 12th to Jan. 26th the symptoms were those of a moderately severe case of typhoid fever, with evening temperatures gradually rising to 104°, morning remissions of from 1° to 2°, four or five loose motions daily, and occasional muttering delirium. The eruption, which almost completely covered the abdomen between Jan. 22nd and Jan. 26th, was more acuminated than is usual in typhoid fever. The headache was more severe than I remember ever to have known it in typhoid, and the blood gave a negative Widal reaction on Jan. 24th. During the period of maximum severity from Jan. 26th to Jan. 30th—whilst there was deep coma, subsultus tendinum, laboured breathing, and profuse perspirations—the bowels were constipated, requiring active aperients, and the urine contained large quantities of albumen. No additional spots came out at this time or afterwards. Tested on Jan. 29th, the blood again gave a negative Widal reaction. Defervescence began on Jan. 30th and went on steadily, though interrupted once or twice by rises of temperature caused by rather extensive sloughing over the sacrum. The blood reaction was negative to Widal's test on Feb. 3rd and to paratyphoids A and B on Feb. 9th.

As regards diagnosis, a well-known hospital physician, who saw the case on Jan. 22nd, thought that at that time everything pointed to typhoid fever. On Feb. 9th, although not, I think, very fully informed as to the course of events in the interval, he wrote that, "notwithstanding the negative results of the tests, he supposed it must have been typhoid fever." Till Jan. 28th I regarded it as a pretty obvious case of typhoid. After that date, without, perhaps, being able fully to account for my change of view, I considered the illness almost certainly not typhoid. Were we to adopt the latter view provisionally we might attribute the eruption to the large doses of potassium bromide which the patient had been having for the relief of headache, though it is difficult to understand why, if so caused, the spots did not appear on the face as well as on the body.

I am, Sir, yours faithfully,

London, May 8th, 1916. I. B. M.

THE GENERAL COUNCIL OF MEDICAL EDUCATION AND REGISTRATION.

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TUESDAY, MAY 23RD.

THE Council began its summer session at its new offices, 44, Hallam-street, W., on Tuesday, May 23rd, Sir DONALD MACALISTER, the President, being in the chair.

New Members.

The following new members were introduced and took their seats:—Professor H. Harvey Littlejohn, M.B. (as representative for the University of Edinburgh), Professor Johnson Symington (as representative of the Queen's University of Belfast), and Professor Andrew Francis Dixon, M.B., Sc.D. (as representative of the University of Dublin).

President's Address.

The PRESIDENT, in his address, commented upon the new premises in Hallam-street, where he said the work of the Council would be thriftier as well as handier, and regretted the death of Sir William Turner before the transfer, in which he took so deep an interest, was completed. At this point Sir Donald MacAlister presented to the Council a bust of his distinguished predecessor, the original for the marble in the Anatomical Museum at Edinburgh by Mr. Herbert Hampton.

The President then referred sympathetically to the death of Sir Charles Bent Ball and regretted the retirement of Sir William Whitla, while welcoming to the Council Professor Dixon and Professor Symington in their stead, and Professor Harvey Littlejohn in the room of Sir Thomas Fraser. He reported also that the General Registrar was still absent on military duty and had been promoted to the rank of Lieutenant-Colonel, while his work was being most ably discharged by Mr. A. J. Cockington as Acting Registrar. He continued:—

The necessary demands of these services for qualified medical officers continue to put a severe strain on the resources of the profession. The Central and Local Committees, which have now been established in the three kingdoms and recognised for recruiting purposes by the military authorities, are actively engaged in endeavouring to meet these demands, and at the same time to leave a fair provision for the medical needs of the civil population. The task is not easy. It calls for much careful consideration of individual persons, places, and circumstances. This could hardly be given under any general scheme of conscription or by any but professional committees in touch with practitioners throughout the country. The value of the work already done by these committees is acknowledged by the War Office and the Admiralty. The greater the support and confidence extended to them by the profession, the better they will be able to carry through their important operations for the good of all.

It had been expected that in 1915, the first complete year since the war began, the number of practitioners added to the Register, and available for military or civil work, would show a perceptible decrease. The expectation would probably have been realised but for the decision to recall from the combatant ranks medical students of the senior years, and but for the establishment of reciprocity with the Dominions and with Belgium. In the result it came out that the number of registrations in 1915 was 1526, or 354 in excess of the average (1172) for the preceding five years. Of the whole number, 181 appear in the Colonial List and 88 in the Foreign List.

The question of maintaining, in this and in future years, a supply of newly qualified practitioners, sufficient for the needs of the country, continues to engage the attention of the military authorities and of the Council. The calling-up of junior medical students, under the successive systems of recruiting, has undoubtedly given rise to some anxiety. Inquiries were accordingly made, at the instance of Lord Derby, as Director-General of Recruiting, in order to ascertain the facts of the situation. From returns obtained by the Council last January, it appeared that the number of students who during 1915 began medical study in the various professional schools and teaching institutions was 1935. The number of first-year women students was 456. The number of second-year students was 1020. The average annual

entry of first-year students registered during the preceding five years was 1441. In 1915 there were thus nearly 500 first-year medical students in excess of the average annual number registered in the preceding five years.

At the beginning of the present year the number of first-year students in actual attendance on instruction at medical schools (apart from teaching institutions) was ascertained to be 1626. The expected depletion of students, as compared with normal years, had thus been more than compensated by new entries, and if things remained as they were, the position four years hence would not be unsatisfactory. It was thought advisable, however, to recommend that exemption from military service, already conceded to fourth-year and fifth-year students, should be extended to third-year students who showed their proficiency in the earlier subjects of the curriculum by passing a third-year professional examination in March or April, at the end of the winter session. An Order to this effect was accordingly issued from the War Office. Lord Derby then asked the Executive Committee to appoint a small committee, including two representatives nominated respectively by the President of the Board of Education and the Secretary for Scotland, for the purpose of watching the general situation as regards Great Britain, and reporting upon it to him as Director-General of Recruiting. In view of the fact that under the attestation and the compulsory systems many of the medical students of 1915 would by April have been called from their studies, Lord Derby further requested that returns should be obtained of the numbers belonging to each of the five years who were in actual attendance on professional courses of instruction at the beginning of the present summer session. The replies to my inquiries on this head, for which I have to thank the authorities of the schools of medicine and teaching institutions, were returnable on May 18th. They are not yet complete, and they have not been fully analysed. But the Council will be interested to learn that so far as they go they give the following results:—Students still pursuing their professional studies in May, 1916: First year, 1800; second year, 950; third year and fourth year, 1750; final year, 950. The expected depletion is most marked in the third-year and fourth-year group. Owing to the Order I have mentioned, many third-year students are reckoned with fourth-year students for recruiting purposes, and the group cannot readily be divided. Your Committee propose to call Lord Derby's attention to this group, as its present depleted condition indicates that a shortage of newly qualified practitioners may be expected by the end of the year 1918.

The representations made to the Government on your behalf respecting the Scottish Midwives Bill were effective. The Bill, which was properly regarded as an emergency measure, became law on Dec. 23rd, 1915. The Scottish Board has since been duly constituted, and the first set of rules for the enrolment of midwives has, after submission to the Executive Committee, been approved by His Majesty in Council.

Revised rules, framed by the Central Midwives Board under the English Act with a view to the better training and supervision of certified midwives, will be submitted to the English Branch Council during the present session. They indicate that the policy of the Central Board is progressive, and that its aim is to increase the efficiency of midwives. In the present emergency the responsibilities of these women must necessarily become greater, and it is the more imperative that the State and the profession should take steps to ensure their entire fitness. That some practitioners have not yet realised their duty with respect to the operations of women, who are *not* certified as fit to attend mothers in childbirth, is strongly suggested by cases brought before you at the last and at the present session. The Council will doubtless be prepared to consider whether the time has not come to issue a special warning notice on this subject.

In Scotland an important legal precedent has been established by a decision, on appeal, of the Court of Session. A limited company carries on in Edinburgh an objectionable form of unqualified practice under the style of the "Dr. Temple Company." The Royal College of Physicians, with Dr. Norman Walker, its treasurer, has succeeded in obtaining a perpetual interdict against the company, restraining it from using the word "Dr." and so pretending to the public that it possessed some medical title to practise. The Royal College has thus vindicated its claim to intervene for the protection of the people of Edinburgh against a gross form of imposition. Company law and administration in England have hitherto failed to check similar abuses. The civic spirit of the Royal College merits our cordial recognition, and its success may well encourage other corporations to re-examine their powers in respect of the medical interests of the public. In another Scottish court a pretender to medical qualifications who attempted to obtain money by falsely assuming a medical title has been sentenced to three months' imprisonment, apparently without the option of the fine for mere false assumption provided in Section 40 of the Medical Act, 1858. This also may prove to be a useful precedent in extension of the meagre safeguards of the statute.

The exigencies of the war have induced certain of the Canadian Provinces to reconsider their position with regard to Imperial reciprocity. In November I reported that Ontario and Saskatchewan had ranged themselves with the Eastern Provinces. Now I report that legislation for the establishment of reciprocal relations has been effected in Manitoba, and is proceeding in British Columbia. The Province of Alberta alone remains outside the movement. It has expressed a desire for reciprocity, but, so far, we have not learned that it has taken the necessary action. When it does, the Dominion of Canada will, province by province, have fulfilled the conditions laid down in the Medical Act, 1886. There will then be no obstacle to the application of that Act by His Majesty to Canada as a whole, and to our recognition, for purposes of registration here, of the diploma in medicine, surgery, and midwifery, granted after examination by the Canada Medical Council. The whole problem of Canadian qualifications would thus at once receive a satisfactory simplification.

The Empire of Japan, whose university degrees in medicine have long been registrable, has now decreed that in October, 1916, the new law on medical practice, intimated to the Council ten years ago, will come into effective operation. The Japanese authorities will then be able to guarantee that the degree of Bachelor of Medicine, granted by specified medical colleges under Government direction or supervision, will represent a qualification not inferior to the corresponding university degree. The Executive Committee will consider the question of adding this college degree, granted under the new conditions, to the list of qualifications registrable in the Foreign List.

Reports may be expected, from the respective committees, on the teaching of medical ethics, the revision of the dental curriculum, and other topics of interest.

New Committees

The Business, Pharmacopœia, Finance, Dental, Dental Education, and Penal Cases Committees were appointed.

The Executive Committee was appointed as follows:—Dr. Norman Moore, Sir Henry Morris, Mr. Tomes, Dr. Langley Browne, Mr. Hodsdon, Dr. Norman Walker, Sir John Moore, and Sir Arthur Chance.

WEDNESDAY, MAY 24TH.

The Council resumed, and the whole sitting was devoted to the consideration of penal cases.

Lady Fayrer, widow of the late Sir Joseph Fayrer, died recently at Falmouth. The deceased lady, who was in her eighty-second year, had resided at Falmouth for many years.

ROYAL WEST SUSSEX HOSPITAL.—The cheerful experience of the Chichester Hospital is that for the first time for many years the income has exceeded the expenditure by no less a sum than £1011, excluding all legacies. The reception of wounded soldiers and gifts from Australia are the reasons assigned for this successful year's working. When the war broke out the hospital provided 30 beds for wounded soldiers, but by the use of the balconies for open-air treatment, the results of which have been excellent, this number was increased to 50, and during the year 258 sick and wounded non-commissioned officers and men were medically treated. The claims of the civilian population of the city and a wide district have not been allowed to suffer in any way owing to the demands of the military situation, and this is another very satisfactory feature of the hospital's work. It should be added that in addition to the Royal West Sussex Hospital there is also at the cathedral city the large war hospital at Graylingwell, besides another hospital at the barracks.

The War.

THE CASUALTY LIST.

THE following names of medical officers appear among the casualties announced since our last issue :—

Killed.

Captain A. C. A. Jekyll, R.A.M.C., attached to the Royal Scots, was an M.B. of Sydney University, New South Wales, and joined the R.A.M.C. in March, 1915.

Wounded.

Lieutenant W. J. E. Stuttaford, R.A.M.C., attached to the London Regiment.

Captain H. A. Pallant, R.A.M.C., attached to the Loyal North Lancashire Regiment.

DEATHS AMONG THE SONS OF MEDICAL MEN.

The following sons of medical men must be added to our lists of those who have fallen during the war :—

Second Lieutenant A. G. Mitchell, Royal Irish Rifles, son of Mr. A. B. Mitchell, F.R.C.S.I., of Belfast.

Captain A. B. Crawford, West Yorkshire Regiment, son of Dr. A. D. Crawford, of Stanton Hill, Mansfield, Notts.

H. K. de W. Harvey, Australian Imperial Force, eldest son of Mr. J. H. Harvey, M.R.C.S., L.R.C.P., of Wyke Regis, Dorset.

Second Lieutenant G. V. Daunt, South Lancashire Regiment, youngest son of Dr. F. E. H. Daunt, of Clapham, London.

Colonel Bradley, Major Lyster, Major Ford, and Surgeon Pleadwell, of the United States Army and Navy Medical Services, reached London last Saturday on an official visit of inspection.

OBITUARY OF THE WAR.

AINSLIE BOOTH, M.B., B.CH. OXON.,

LIEUTENANT, ROYAL ARMY MEDICAL CORPS.

Lieutenant A. Booth, who fell in action on April 30th, was 30 years of age and the only son of the Very Rev. L. P. Booth, D.D., for many years Dean of St. John's, Kaffraria. He was educated at Marlborough and Keble College, Oxford, entering the medical school of St. Thomas's Hospital and taking his degrees of M.B. and B.Ch. Oxon. in 1912. He married Miss Barlow, of Oxford, and shortly afterwards left for South Africa to practise his profession there. Immediately upon the declaration of war he was mobilised as captain in the South African Medical Corps, and served through the Orange Free State Province rebellion and the German South-West Africa campaign. On its successful conclusion he returned to England, acted for a short time as temporary medical officer at the Herts County Asylum, Hill End, St. Albans, and while there obtained a commission as Lieutenant in the Royal Army Medical Corps in November, 1915. He died while doing his duty. A man was badly wounded by shell fire and Lieutenant Booth went out under fire to his assistance. He was then hit himself, being immediately rendered unconscious, and died soon afterwards. A medical friend writes of him: "The early death of Lieutenant Booth is a great loss to the medical profession. He was a man who made friends wherever he went and who was keen and well fitted for his work."



GEORGE FLETT BARR, M.B., CH.B. GLASG.,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain George Flett Barr, who died in France on March 23rd, of cerebro-spinal meningitis, at the age of 25 years, was the eldest son of the late Mr. James Barr, of Paisley. Educated at the John Neilson Institution, Paisley, and the Glasgow High School, he studied medicine at Glasgow University. At school and college he excelled in outdoor sports. Graduating in 1914 with distinction in surgery, he then filled the posts of house surgeon and house physician at the Royal Alexandra Infirmary, Paisley, and subsequently that of resident medical officer at the Paisley Burgh Isolation Hospital, and assistant to the burgh medical officer of health. In the earliest days of the war he offered his services and received a commission in the Royal Army Medical Corps, being recently promoted to a captaincy. Varied and arduous work fell to his lot in France, but superiors and colleagues alike speak of its cheerful and conscientious performance. He was taken ill on March 19th, and died four days later. His associates, both in civil and military work, held Captain Barr in sincere affection for his strong and gentle personality, and the words of his commanding officer may fittingly close this notice of him: "I never found him fail in the least respect."



THE MILITARY SERVICE BILL: THE INSTITUTION OF PROFESSIONAL COMMITTEES.

On the motion of Lord Sandhurst, on Monday in the House of Lords, the following clause was inserted in the Bill :—

Regulations made under the second schedule to the principal Act shall provide for the establishment of professional committees to deal with claims for exemption made by duly qualified medical practitioners; and any application made by such a medical practitioner on any ground, other than that of conscientious objection, for a certificate of exemption shall be referred by the tribunal to whom it is made to such a committee in accordance with those regulations; and the recommendation of the committee on the application shall be binding on any tribunal constituted under the principal Act.

Lord Sandhurst was acting in behalf of the Army Council, and the Bill, which will receive the Royal assent this week, contains his valuable amendment. It is also definitely stated that the War Office will recognise, as the professional committees mentioned in the new clause, the Central Medical War Committee, the Reference Committee of the Royal College of Physicians of London and the Royal College of Surgeons of England, and the Scottish Medical Service Emergency Committee. An Order in Council, under the new clause, with the Regulations, will be issued at once.

THE SALE OF NARCOTIC DRUGS TO SOLDIERS.

The order made by the Army Council prohibiting the sale of narcotic drugs to members of His Majesty's Forces, and defining the conditions under which such drugs may be prescribed and dispensed, provides yet another instance of an innovation, long advocated in years of peace, being secured without controversy under the stimulus of a great war. Hitherto the existing law has been unable to touch such a gross offender as appeared recently at Bow-street on a charge of hawking cocaine snuff in a London street, while the more elastic procedure under the Defence of the Realm Act is capable of producing at once a drastic improvement. The Army Order lays down the following precise conditions under which a member of the forces can obtain cocaine or other specified narcotic drugs. The drug must

now be ordered for him by a registered medical practitioner on a written prescription, dated and signed by the practitioner with his full name and qualifications, and marked with the words, "Not to be repeated," and the person selling or supplying the drug must mark the prescription with his name and address and the date on which it is dispensed. The articles to which this Order applies are as follows: Barbitone, benzamine lactate, benzamine hydrochloride, chloral hydrate, coca, cocaine, codeine, diamorphine, Indian hemp, opium, morphine, sulphonal and its homologues, and all other salts, preparations, derivatives, or admixtures prepared therefrom or therewith. It is a misfortune for the civil population not to be similarly protected by Statute.

BENEVOLENT FUNDS FOR THE SERVICES AUXILIARY TO THE ROYAL ARMY MEDICAL CORPS.

We have already called attention to the proposal for establishing some kind of benevolent organisation for the benefit of the families of medical officers in the Special Reserve, the Territorial Force, and the new armies. A meeting, to be presided over by the Director-General, will be held in the Royal Army Medical College, Grosvenor-road, S.W., at 2.45 P.M., on Thursday, June 1st, at which it is hoped there will be a large attendance of officers now serving.

Medical News.

ROYAL COLLEGES OF PHYSICIANS OF LONDON AND SURGEONS OF ENGLAND.—At a meeting of the Comitia of the Royal College of Physicians of London on April 27th, and of the Council of the Royal College of Surgeons of England on May 11th, diplomas of L.R.C.P. and M.R.C.S. were respectively conferred upon 99 candidates (including six ladies) who have passed the necessary examinations and complied with the by-laws of the Colleges. The following are the names and medical schools of the successful candidates:—

Hannah Katherine Alton, Calcutta Medical College and Royal Free Hospital; Kevin Doyle Atteridge, St. Bartholomew's Hospital; John Aydon, Cambridge University and St. Bartholomew's Hospital; Arthur James Bado, St. Thomas's Hospital; Harold John Bensted, Guy's Hospital; David Simon Brachman, Pennsylvania University and St. Bartholomew's Hospital; John Prichard Bracken, University College Hospital; Ingram Richard Rhodes Brogden, Cambridge University and Guy's Hospital; Arthur Stanley Carter, Middlesex Hospital; Henry Hutton Castle and Louis Arthur Celestin, St. Thomas's Hospital; George Edwin Chissell, Middlesex Hospital; Hester Mary Church and Mabel Campbell Clarke, Royal Free Hospital; Allwyn Herbert Clarke, St. Thomas's Hospital; Percy Selwyn Clarke, St. Bartholomew's Hospital; Hyman Maurice Cohen, College of Physicians and Surgeons, Baltimore, and Manchester University; Walter Herbert Coldwell, Westminster Hospital; William Maurice Cromble, St. Thomas's Hospital; Robert Cecil Davenport and Spencer Graeme Dunn, St. Bartholomew's Hospital; Frederick Dunphy, Westminster Hospital; Maurice Dwyer, Leeds University and St. Thomas's Hospital; William Felix Eberli, Cambridge University and St. Bartholomew's Hospital; Arthur William Foster Edmonds, Westminster Hospital; Philip Oswald Ellison, St. Bartholomew's Hospital; Griffith Ifor Evans, Oxford University and St George's Hospital; Humphrey Silvester Evans, Cambridge University and St. Thomas's Hospital; Leonard Wynne Evans, St. Bartholomew's Hospital; William Farquharson, St. Mary's Hospital; Guy Fehrsen, London Hospital; Eric Alfred Fiddian, Cambridge University and St. Bartholomew's Hospital; Sidney William Fisk, University College and Middlesex Hospitals; Maurice Rolfe Vickers Ford, Sheffield University; Andrew Radburne Fuller, St. Mary's Hospital; Douglas Hugh Aird Galbraith, Guy's Hospital; Gloster Tyndall Garraway, University College Hospital; Sures Chandra Ghose, Calcutta Medical College and St. Mary's Hospital; Charles Cunliffe Goodall, Cambridge University and London Hospital; Frederick Harold Sellick Greenish, Cambridge University and London Hospital; Ethne Haigh, Durham University; John Charles Neville Harris, Cambridge University and St. Thomas's Hospital; Spenser Frederick Harris, London Hospital; Arthur Noel Haworth, Charing Cross Hospital; Nathan Norris Haysom, St. Bartholomew's Hospital; William Andrew Hotson, Westminster Hospital; Ernest Gwyn Howell, University College, Cardiff and St. Thomas's Hospital; George Philip Buckingham Huddy, London Hospital; Edith Caroline Hudgell, Royal Free Hospital; Samuel Hutchinson, University College Hospital; Thomas Henry Jackson, Charing Cross Hospital; Bhoputsinhj Bhugvatsinhji Jareja, Cambridge University and St. Thomas's Hospital; William George Johnston, St. Mary's Hospital; Arthur Maddock Jones, Charing Cross Hospital; Tom Jones, Cambridge and Manchester Universities; Vladimir Kameneff, Moscow, Edinburgh, and University College Hospital; Teng Liang Kan, St. Thomas's Hospital; Robert Percival Langford-Jones, University College Hospital; Edward Eric Lightwood, Westminster Hospital; *Charles William Berry Littlejohn, Melbourne and Oxford Universities and St. Bartholomew's Hospital; Harold Bishop Logan, Bristol University and University College Hospital; Peter George McEvedy, Guy's Hospital; Showkiram Sahijram Malkani, Bombay University and University College Hospital; Philip Sydney Marshall, University College Hospital; Francis Courtenay Mason, Middlesex Hospital; Adeline Mabel Matland, Royal Free Hospital; Bagenal Harvey Mellon, Dublin; Hickman Walter Lancelot Molesworth, London Hospital; Telford David Morgan, Cambridge University and London Hospital; Arthur Geoffrey Morris, Bristol University; Geoffrey Moulson, St. Thomas's Hospital; Sinnethamby Muttiah, London Hospital; Kathira Velu Muttukumaru, Madras University and Middlesex Hospital; Frank Newey, Birmingham University; Donald Craig Norris, London Hospital; Alexander Jeremiah Orenstein, Jefferson Medical College and London Hospital; Frank Cunliffe Ormerod, Manchester University; Philip Esmond Durrell Pank, Cambridge University and London Hospital; Gilbert Eugene Paul, Madras University and Middlesex Hospital; Ronald Rees Powell, Cambridge University and St. Bartholomew's Hospital; Jagan Nath Puri, London Hospital; Harrie Maxwell Quackenbos, Jefferson Medical College and University College Hospital; Raghavendra Rau Damodar, Madras and Middlesex Hospital; Charles Reginald Reckitt, London Hospital; Baron Theodore Rose, Birmingham University; Percy Gunn Russell, Middlesex Hospital; Morris Schwartz, University College Hospital; Denys Munro Smith, Bristol University; William Steadman, University College Hospital; Harold Game Stormer, St. Thomas's Hospital; George Carson Swanson, Glasgow University; Hugh Watts Taylor, London Hospital; Douglas George Clutsam Tasker, Bristol University; Granville Burnett Wild, Manchester University; Richard Willoughby Willenberg, Ceylon Medical College and Manchester University; Alfred Williams-Walker, Birmingham University; Geoffrey Commeline Williams, Cambridge and Bristol Universities; Cuthbert Edward Wise, Lausanne University and University College Hospital; and Reginald Salisbury Woods, Cambridge University and St. George's Hospital.

* Diploma of M.R.C.S. conferred on April 13th.

SOCIETY OF APOTHECARIES OF LONDON.—At examinations held recently the following candidates were successful in the subjects indicated:—

Surgery.—H. H. Bailey (Section II.), London Hospital; A. Glen (Sections I. and II.), Glasgow and Sheffield; H. M. Hobson (Section I.), London Hospital; and E. G. D. Murray (Sections I. and II.), Cambridge and St. Bartholomew's Hospital.

Medicine.—H. H. Bailey (Sections I. and II.), London Hospital; P. C. C. Fenwick (Sections I. and II.), St. Thomas's Hospital; R. F. Jarrett (Section I.), London Hospital; E. G. D. Murray (Section I.), Cambridge and St. Bartholomew's Hospital; L. F. Pain (Sections I. and II.), Royal Free Hospital; and M. B. M. Tweed (Sections I. and II.), Guy's Hospital.

Forensic Medicine.—R. F. Jarrett, London Hospital; L. A. B. Moore, Guy's Hospital; E. G. D. Murray, Cambridge and St. Bartholomew's Hospital; A. W. North, Birmingham and London Hospital; and L. F. Pain, Royal Free Hospital.

Midwifery.—M. Dwyer, Leeds and St. Thomas's Hospital; H. T. Lamb, Manchester and Guy's Hospital; E. A. Leak, Cambridge and London Hospital; A. W. North, Birmingham and London Hospital; S. L. Szpigner, London Hospital; M. B. M. Tweed, Guy's Hospital; and H. St. H. Vertue, Oxford.

The Diploma of the Society was granted to the following candidates, entitling them to practise medicine, surgery, and midwifery:—M. Dwyer, A. Glen, A. W. North, and L. F. Pain.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH.—At a meeting of the College held on May 18th the following gentlemen, having passed the requisite examinations between Jan. 3rd and 5th, 1916, were admitted Fellows:—

Dines Chandra Chakravati, William Wallis Hoare, George Robert Livingston, Alfred Charles Sandston, Neil Frederick Sinclair, Herbert M'Lean Staley, and Muhammed Abdul Wajid.

At the same meeting the Bathgate Memorial Prize, consisting of a bronze medal and a microscope, was, after a competitive examination in Materia Medica, awarded to Miss Marguerite Robertson Stirling. The Ivison Macadam Memorial Prize in Chemistry, consisting of a bronze medal and a set of books, was awarded, after competitive examination, to Miss Janet Grant.

CENTRAL MIDWIVES BOARD.—A meeting of the Central Midwives Board was held at Caxton House, Westminster, on May 18th, with Sir Francis H. Champneys in the chair. Further correspondence with Dr. E. J. Maclean, of Cardiff, was considered with regard to the acceptance of the curriculum and system of training which he proposes to adopt in connexion with the Glamorgan County free midwifery students as a compliance with the requirements of the new Rules C. 1 and 2. The Board directed that Dr. Maclean be informed that the rules require (C. 1 (1)) that each candidate must have "undergone a course of training in midwifery extending over a period of not less than six months." The Board considers that the scheme for Cardiff as set forth by Dr. Maclean does not provide for six months' training, inasmuch as during part of the course the candidates are attending lectures only. A letter was also considered from a midwife to whom the Board has granted approval to train midwives on the condition that she undertook to train only one pupil at a time, asking that this restriction may now be removed to the extent of allowing her to train two pupils at one time. The Board directed that the restriction imposed not to train more than one pupil at a time be now removed, subject to a report from the local supervising authority that her house is suitable for the accommodation of two pupils. A letter was

considered from Professor T. W. Arnold, C.I.E., educational adviser to Indian students, asking the Board to admit to examination Mrs. Batra, a Hindoo lady, who is unable to furnish certificates of birth or of marriage. The Board decided that the matter be left to the chairman to deal with. A letter was considered from a certified midwife, calling the attention of the Board to the difficulty of securing the attendance of a medical practitioner when sent for in an emergency on the advice of a midwife. The Board decided that the certified midwife be informed that the Board takes note of her communication.

ROYAL ALBERT HOSPITAL, DEVONPORT.—As a result of the recent house-to-house collection for the Royal Albert Hospital the sum of £820 has been raised for the funds of that charity, and in addition promises of weekly, monthly, and annual subscriptions have been obtained.

THE PROPOSED SCHOOL OF MEDICINE FOR JOHANNESBURG.—An important meeting representative of the medical profession in the Transvaal was held recently in the hall of the South African Institute for Medical Research, Johannesburg. The object of the gathering is expressed in the first resolution, which was unanimously adopted:—

That in the opinion of this meeting of the medical profession of this province, the time has now arrived when, in the interests of the community, a School of Medicine should be established in the Transvaal, with facilities for the granting of diplomas.

It was further resolved to communicate the foregoing to the Prime Minister (General Botha), the Minister of Education, and all Members of Parliament. In moving the principal resolution Dr. W. Watkins-Pitchford, Director of the Institute, prefaced his remarks with the statement that Johannesburg had a European population larger than any other town in South Africa, and that it is essentially an industrial town. Its total population at the present time is 237,000 of which one half—119,000—are Europeans. For the purposes of higher education, Dr. Watkins-Pitchford pointed out, it is obvious that the smaller towns of the Rand, from Randfontein in the west to Springs in the east, should be associated with the central town of Johannesburg, and these being included the total population became 430,000, of which 206,000 are white people. In Johannesburg alone, he said, there are more than twice, and on the whole of the Witwatersrand more than four times, as many people as there were in Leeds when its medical school was established. He pointed out that the number of hospital beds on the Witwatersrand is about 8170, representing a wealth of material for clinical instruction which is unequalled throughout the world. There are some 520 medical practitioners registered in the Transvaal, of whom 240 obtained their qualifications in Scotland, 172 in England, 58 in Ireland, 43 held diplomas obtained in various other countries, including three from Canada and two from Australia, and there are five practitioners who have no qualifications other than the licence of the late Government of the South African Republic.

DONATIONS AND BEQUESTS.—The late Dame B. M. Baker, who left estate valued about £11,000, has bequeathed, after various personal bequests have been paid, the residue to form an endowment fund for the Newton Abbot Hospital, "in memory of Sir Samuel and Lady Baker."—Mr. Sam Gamble, of Manchester, has set aside the sum of £5,000 to be devoted to the purpose of assisting needy medical students at the University of Manchester. The gift will be available for women who have passed their first medical examination, on the condition that they are Christians and total abstainers.—The Royal Dental Hospital, Leicester-square, has received a donation of £400 from the trustees of Smith's (Kensington Estate) Charity and £100 from the executors of the late Mr. William Johnston.

BOOKS, ETC., RECEIVED.

BAILLIÈRE, J. B., ET FILS, Paris.
Gynécologie. By Professor E. Forgue and Professor G. Massabau. (Nouveau Traité de Chirurgie, Vol. XXXIV.) Price 25 fr.

CAMBRIDGE UNIVERSITY PRESS, Cambridge.
The Purpose of Education. By St. George Lane Fox Pitt. New edition, with Preface by Professor Emile Boutroux. Price 2s. 6d. net.

CHAPMAN AND HALL, London.
Back to the World. By Mary Wall. Price 6s. net.

GREEN, W., AND SONS, Edinburgh.
Encyclopædia Medica. Vol. III.: Chloroform to Dyspnœa. Under General Editorship of J. W. Ballantyne, M.D., C.M., F.R.C.P. Edin. Second edition. Price 20s. net.

UNIVERSITY PRESS, Oxford.
Daubeny Laboratory Register, 1904–1915. With Notes on the Teaching of Natural Philosophy and with Lists of Scientific Researches carried out by Members of Magdalen College, Oxford. By R. T. Günther, M.A., F.L.S.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Medical Men and Military Service.

A MOST important clause has been introduced into the Military Service Bill in the House of Lords to provide that medical men who are within the age of compulsory military service will have their claims for exemption dealt with by professional bodies and not by the ordinary tribunals. The new clause is in the following terms:—"Regulations made under the second schedule to the principal Act shall provide for the establishment of professional committees to deal with claims for exemption made by duly qualified medical practitioners, and any application made by such a medical practitioner on any ground, other than that of conscientious objection, for a certificate of exemption shall be referred by the tribunal to whom it is made to such a committee in accordance with those regulations, and the recommendation of the committee on the application shall be binding on any tribunal constituted under the principal Act."

The clause was subsequently submitted to the House of Commons, and was agreed to by 163 votes to 42. It therefore became a part of the Bill as it is presented for the Royal assent.

HOUSE OF COMMONS.

WEDNESDAY, MAY 17TH.

Medical Officers of Voluntary Military Hospitals.

Captain DOUGLAS HALL asked the Under Secretary for War whether, in view of the fact that it was now proposed to give commissions and grant military rank to officers of volunteer corps, the War Office was prepared to grant similar privileges to medical officers in charge of voluntary military hospitals.—Mr. TENNANT answered: Commissions have already been given to all medical men doing work which renders military rank necessary. It is not proposed to recommend any further extension of the granting of temporary commissions in the R.A.M.C. except under this principle.

Invalid Combatant Prisoners.

Replying to Sir H. ELVERSTON, Sir EDWARD GREY (Foreign Secretary) wrote: An agreement has been arrived at with the German Government for the transfer to Switzerland of British and German wounded and invalid prisoners of war who are ineligible for repatriation under the agreement affecting incapacitated prisoners of war. The agreement is on the lines of that already existing between France and Germany.[1]

Burials and Public Health.

Mr. GLANVILLE asked the Colonial Secretary whether he had received a telegram on Thursday, May 11th, from the Secretary to the British Undertakers' Association requesting that there should be no further depletion of their staffs, as it would endanger the national health if during the forthcoming summer there should be delay in burying the dead, especially in infectious cases; and what had been his reply thereto.—Mr. BONAR LAW answered: I did receive the telegram referred to, and the point raised in it was considered.

THURSDAY, MAY 18TH.

Red Cross Societies' Work in Irish Rising.

In the course of a reply to Mr. GINNELL, Mr. TENNANT (Under Secretary for War) said that the House would be glad to learn that members of all Red Cross societies rendered valuable and impartial assistance to all wounded, whether civilians, troops, or rebels, in the recent Irish rising.

Transfer to Switzerland of Prisoners of War.

Mr. BLISS (on behalf of Mr. THEODORE TAYLOR) asked the Foreign Secretary what steps the Swiss Government had taken to put into operation the recent agreement as to the transfer of British prisoners from Germany to Switzerland and German prisoners from Great Britain to Switzerland.—Sir EDWARD GREY replied: It is understood that the Swiss Government are taking all necessary steps to put the agreement referred to into operation. Arrangements are being made to intern the British prisoners of war at Chateau d'Oex. Four Swiss medical commissions, consisting of two medical officers each, are starting for this country on May 20th to examine the German prisoners, and it is expected that the Swiss medical commission which is to examine the British prisoners in Germany will leave Berne on the same date. I should like to take this opportunity of expressing publicly the gratitude of the country and His Majesty's Government to the Swiss Government for the cordial and ungrudging assistance which they have given from the outset towards the establishment of this scheme.

[1] THE LANCET, April 29th, 1916, p. 936.

Mr. BLISS asked the Under Secretary for War what steps were being taken by the War Office to bring into operation at the earliest possible moment the agreement under which British prisoners were to be transferred from Germany to Switzerland and German prisoners from Great Britain to Switzerland.—Mr. TENNANT answered: In order that there may be no avoidable delay an agreement has just been made with the German Government whereby the selection of those who are unquestionably included in the category of disabilities as justifying transport to Switzerland may be made by the medical authorities of the country where the prisoners are interned. The necessity for the majority of medical men on those selection boards being of Swiss nationality will be waived in this fresh selection. The necessary instructions have been issued.

Chauffeurs of Medical Men.

Mr. BOYTON asked the Under Secretary for War whether he was aware of the difficulty experienced by consulting surgeons who devoted the whole or part of their time to work at the various military hospitals in getting chauffeurs of non-military age to drive their motor cars; and whether the War Office would find soldiers to drive the cars of such physicians and surgeons as might apply and be approved.—Mr. TENNANT said in reply: It would not be possible to release soldiers for this work. I am told that women drivers have been employed in certain cases, and I suggest this is the solution of the difficulty. At the same time may I express my warm appreciation of the valuable assistance which is being given by consulting physicians and operating or consulting surgeons at the various military hospitals.

Milk-supply at Haslar Hospital.

In the course of lengthy replies to Mr. W. NICHOLSON on the milk-supply at Haslar Hospital, Mr. MACNAMARA (Secretary to the Admiralty) said: The hospital authorities have very efficient arrangements for supervising and analysing the milk- and other food-supplies, which are considered adequate to detect any defects in quality of the deliveries. The Admiralty, however, welcomes any assistance which the county council inspectors are able to give in the ordinary course of their duties.

Certifying Factory Surgeons.

Mr. MCCALLUM SCOTT asked the Home Secretary whether the recommendation of the Retrenchment Committee to discontinue the reporting of accidents by certifying factory surgeons was made after receiving information from the Home Office as to the value of the evidence of an independent surgeon, who had examined and interrogated the injured person, in determining the causation of preventible factory accidents, and as to the value to an injured person of an independent and skilled opinion; and whether the Department proposed to act upon the recommendation.—Mr. HERBERT SAMUEL answered: The Committee took evidence from the Home Office before making their report. The question of the value of the certifying surgeon's inquiries is a matter for discussion which had better perhaps be reserved till the Bill I am proposing to introduce is before the House. Meantime, I would refer the honourable Member to the report of the Accidents Committee of 1911.

MONDAY, MAY 22ND.

Lower Infantile Mortality.

Mr. ANDERSON asked the President of the Local Government Board whether the rate of infantile mortality in London and some other towns was causing anxiety to those concerned with local administration; whether he had received any communication recently on this matter from the London County Council; and what steps, if any, the Local Government Board were taking to enforce thorough and comprehensive schemes for child and maternity welfare.—Mr. LONG answered: I am glad to say that the number of infant deaths in London and the large towns is lower this year than the average of the five preceding years, and the infantile death-rate for London itself for the first quarter of 1916 was lower than that of the corresponding quarter during each of the last ten years. My attention has been drawn to a resolution which was to be moved at the last meeting of the London County Council on this subject, but I have not yet received any communication from them. My department are taking active steps, and with much success, to induce local authorities to adopt and carry out comprehensive schemes for maternity and child welfare. Such schemes are now working in nearly all the large towns and throughout a number of counties.

Mr. ANDERSON asked the Parliamentary Secretary to the Board of Trade whether he was aware that in various districts of London the price of milk had been advanced to 6*d*. per quart; that there was no scarcity of milk, and that these prices, whilst yielding high profits to farmers and milk vendors, were aggravating the problem of infantile mortality among the children of the poor; and whether the Government, by legislation or otherwise, proposed to take any steps in the matter.—Mr. PRETYMAN replied: I understand that the rise from 5*d*. to 6*d*. a quart is confined to certain districts in London. I am causing inquiries to be made as to this matter, and will let my honourable friend know the result.

Watering London Streets.

Sir GODFREY BARING asked the President of the Local Government Board whether his attention had been called to the decision of certain metropolitan boroughs to abandon, in the interests of economy, street watering during the coming summer; whether this step had been taken in consequence of any advice by the Board or had received its approval; whether his medical advisers, having regard to the need for the safeguarding of the health of the public, endorsed this policy of the borough councils; whether provincial boroughs were adopting the same line of action; whether he could state approximately the amount of the money-saving to the public; and whether, if he had not done so, he would set on foot an investigation into the desirability or the reverse of this new municipal innovation.—Mr. LONG replied: I have seen references in the press to a proposal of certain metropolitan borough councils to abandon street watering during the coming summer, and I will cause some inquiry to be made into the matter. My advisers would not endorse a policy which involved such a stoppage, but they would probably agree that there are cases where the amount of watering done in ordinary times might be reduced without risks. I have not heard of the abandonment of street watering by provincial authorities. My honourable friend will realise that in the circumstances I cannot give any estimate as to the probable money-saving.

Dr. H. O'Donoghue.

Mr. W. O'BRIEN asked the Under Secretary for War whether he was aware that Dr. Henry O'Donoghue, a citizen of Dublin, who had never had anything to do with extreme politics, left his home in Leeson Park on Easter Monday evening to render any assistance in his power to wounded people and had not since been heard of by his family; whether Dr. O'Donoghue was arrested and had since been deported, without any form of trial or examination; and, if so, whether any redress would be given for this treatment of a medical man while engaged in tending the wounded.

Mr. FLAVIN also asked the right honourable gentleman whether he was aware that Dr. Henry O'Donoghue, of Leeson Park, Dublin, left his home on Easter Monday to render medical aid to the wounded people in Dublin; whether he had been arrested by the military authorities in Dublin and deported to some place in England; and whether he would have immediate inquiries made about Dr. O'Donoghue with a view to his release.—Mr. TENNANT replied: I shall answer both questions together. I am informed that orders were given for the release of Dr. H. O'Donoghue on May 19th, and he is now, I believe, at liberty. It appears that Dr. O'Donoghue presented himself at Dublin Castle and said he came to offer his services as a medical man and was brought before the Provost Marshal before any steps were taken to allow him to assist in treating the wounded. He was then found to be in the possession of Sinn Fein literature, and was put under arrest. This was on April 24th. He was sent to hospital on April 26th, and having been discharged, was readmitted on April 30th, and again discharged from hospital on May 4th. He was subsequently sent to Stafford on May 8th. I have not received particulars of the subsequent investigation, but, as I have stated, orders were given for the release of Dr. O'Donoghue.

TUESDAY, MAY 23RD.

The Scottish Women's Hospital.

Mr. POLLOCK asked the Under Secretary for War whether the offer of the Scottish Women's Hospital to place a unit at the disposal of the Government for service in Mesopotamia had not been accepted; if so, whether this decision was taken on grounds particular to that offer, or whether it indicated a general rule to refuse similar offers; and, if so, what was the reason for this decision, in view of the fact that similar hospital units had proved their value in France, Serbia, Malta, and Salonika.—Mr. TENNANT wrote in reply: It is a fact that the Scottish Women's Hospital was offered for service in Mesopotamia and was refused. The Government of India has been informed that all necessary hospital equipment and personnel will be supplied on demand from army services, and there is no need for the employment of small voluntary hospital units.

WEDNESDAY, MAY 24TH.

Medical Men and Military Service.

The Lords' amendments to the Military Service Bill were considered.

Mr. LONG (President of the Local Government Board) moved that the House do agree with the Lords in an amendment inserting a new clause in the Bill setting up special committees to deal with claims for exemption from medical men. He said that this clause was the result of

an arrangement between the War Office and representatives of the medical profession throughout the country, the negotiations in respect to which had not concluded when the Bill left the House of Commons. The object was to see that while the needs of the Royal Army Medical Corps were properly met, the requirements of the civil population were also dealt with with care and discrimination.

Mr. KING said that much more valid reasons should have been advanced for a proposal of this kind. If the desire was to make it easier for medical men to get exemption, why not make provisions by which they should have a special ground for claiming exemption before the ordinary tribunals? There did not seem to him any reason why medical men should have special tribunals any more than lawyers, grocers, undertakers, farmers, or agricultural labourers. He criticised bitterly the action of the War Office and its medical department, and estimated that 40 to 50 per cent. of the medical service in the army was being wasted.

Several other Members having criticised the clause, mainly on the ground that there was no reason for the constitution of a special tribunal for medical men,

Mr. LONG explained that the reason why no court of appeal was allowed was because such a court was impossible in the case of a purely *ad hoc* body of this kind. The main object of the proposal was to ensure that a proper balance was kept between the needs of the army and those of the civil population in respect of the available supply of medical men.

Mr. R. MCNEILL did not see that medical men were any better qualified to determine these cases than the ordinary tribunals with the advice of special professional committees.

Mr. CHARLES ROBERTS (speaking on behalf of Mr. LONG) urged that a special medical tribunal was much better than the ordinary tribunals for the purpose. Its members would know the medical needs of the district better than an ordinary tribunal, and they would be better able to decide in regard to cases of financial hardships. If it were left to the ordinary tribunals chaos and confusion would result.

Mr. J. M. ROBERTSON approved of setting up professional committees.

On a division the House, by 163 votes to 42, agreed to the insertion of the amendment in the Bill.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

BEDWELL, Mr., has been appointed Public Vaccinator for Hayle, Cornwall, by the Redruth Board of Guardians.

CARRUTHERS, N. S., L.R.C.P. Lond., M.R.C.S., Certifying Surgeon under the Factory and Workshop Acts for the Acle District of the county of Norfolk.

CRAGG, E. H., L.R.C.P. Lond., M.R.C.S., Certifying Surgeon under the Factory and Workshop Acts for the Billingborough District of the county of Lincoln.

GLOVER, V. J., M.D. Liverp., Ch.B. Vict., Medical Officer of Health for the Waterloo and Seaforth U.D.C., and Schools Medical Officer.

HILLYER, W. H., M.D. Durh., Certifying Surgeon under the Factory and Workshop Acts for the East Grinstead District of the county of Sussex.

SIMPSON, T. YOUNG, M.D., M.S. Durh., F.R.C.S. Edin., Chirurgien Chef to the Hôpital Anglais, 249 bis, Rhône, France.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).
When the application of a Belgian medical man would be considered the advertisers are requested to communicate with the Editor.

BRADFORD, ROYAL EYE AND EAR HOSPITAL.—Non-resident House Surgeon or paid Clinical Assistant.

BRISTOL ROYAL HOSPITAL FOR SICK CHILDREN AND WOMEN.—Female House Physician. Salary £150 per annum, with board, &c.

BURNLEY, VICTORIA HOSPITAL.—Female House Surgeon. Salary £160 per annum, with residence, &c.

BURY INFIRMARY.—Female Junior House Surgeon. Salary £150 per annum, with board, &c.

CHESTERFIELD AND NORTH DERBYSHIRE HOSPITAL.—Second House Surgeon. Salary £150 per annum, with board, &c.

COLCHESTER, ESSEX COUNTY HOSPITAL.—Ophthalmic Surgeon.

DEWSBURY COUNTY BOROUGH.—Female Medical Practitioner. Salary £300 per annum, &c.

DUDLEY, GUEST HOSPITAL.—Assistant House Surgeon for six months. Salary at rate of £120 per annum, with board, &c.

EXETER, ROYAL DEVON AND EXETER HOSPITAL.—House Physician for six months. Salary at rate of £150 per annum, with board, &c.

HASTINGS, EAST SUSSEX HOSPITAL.—House Surgeon. Salary £150 per annum, with board, &c.

HUDDERSFIELD ROYAL INFIRMARY.—Senior House Surgeon and Assistant House Surgeon. Salaries £150 and £100 per annum, with board, &c

LIVERPOOL, BROWNLOW HILL INSTITUTION.—Resident Assistant Medical Officer. Salary at rate of £300 per annum, with rations, &c.

LEEDS GENERAL INFIRMARY.—Resident Aural Officer. Salary £100 per annum, with board, &c.

LONDON TEMPERANCE HOSPITAL, Hampstead-road, N.W.—Assistant Resident Medical Officer for six months. Salary at rate] of £120 per annum, with board, &c.

MANCHESTER, COUNTY ASYLUM, Prestwich.—Locum Tenens. Salary £7 7s. per week.

MANCHESTER NORTHERN HOSPITAL FOR WOMEN AND CHILDREN, Parkplace, Cheetham Hill-road.—Female House Surgeon. Salary £120 per annum, with apartments, &c.

METROPOLITAN HOSPITAL, Kingsland-road, N.E.—Surgeon for Diseases of Women.

MIDDLESBROUGH, NORTH ORMESBY HOSPITAL.—Assistant House Surgeon. Salary £150 per annum, with board, &c.; or Senior Student. £100 per annum.

PLYMOUTH, SOUTH DEVON AND EAST CORNWALL HOSPITAL.—House Surgeon. Salary £250 per annum, with board, &c.

PRESTON, LANCS, COUNTY ASYLUM, Whittingham.—Assistant Medical Officer. Salary £250 per annum, with board, &c.

QUEEN CHARLOTTE'S LYING-IN HOSPITAL, Marylebone-road, N.W.—Pathologist and Registrar. Salary at rate of £80 per annum and lunch.

RUSSIAN UNITS, NATIONAL UNION OF WOMEN'S SUFFRAGE SOCIETIES, 14, Great Smith-street, Westminster.—Junior Medical Women for Work among Refugees in Russia.

ST. GEORGE'S HOSPITAL, S.W.—Radiographer. Salary at rate of £100 per annum.

SHEFFIELD ROYAL INFIRMARY.—House Physician. Salary £120 per annum, with board, &c.

SOUTH LONDON HOSPITAL FOR WOMEN, 88-90, Newington-causeway, S.E.—Temporary Female Assistant Physician for six months. Salary 10*s.* 6*d.* for each attendance.

VENTNOR, ISLE OF WIGHT, ROYAL NATIONAL HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST.—Assistant Resident Medical Officer.

Births, Marriages, and Deaths.

BIRTHS.

BELL.—On May 18th, at Ravenscroft, Luton, Bedfordshire, the wife of Lieutenant R. D. Bell, R.A.M.C., of a daughter.

FARR.—On May 21st, at Watlington, Norfolk, the wife of C. C. J. Farr, M.R.C.S., L.R.C.P. Lond., of a son.

HIGGS.—On May 21st, at "Dunedin," Egmont-road, Sutton, Surrey, the wife of Major F. W. Higgs, M.D., R.A.M.C. (T.), of a daughter.

MILLS.—On May 16th, at Heath-street, Hampstead, N.W., the wife of Lieutenant E. Halford Mills, R.A.M.C., of a son.

WEIR.—On May 18th, at South Lodge, Merstham, Surrey, the wife of Walter Weir, M.B., B.S., M.R.C.S., L.R.C.P., of a son.

MARRIAGES.

RICE-OXLEY—MILLER.—On May 16th, at St. Mary Abbot's, Kensington, Douglas George Rice-Oxley, M.B., Captain, R.A.M.C. (T.), to Estelle Mortimer, only daughter of the late Robert Mortimer Miller and Mrs. Sidgwick, "Branksome," Ipswich.

RYLAND—MOORE.—On May 17th, at The Hirsel Private Chapel, Coldstream, N.B., Archer Ryland, F.R.C.S. Edin., Captain, R.A.M.C., to Gladys Mary, daughter of the Rev. C. A. Moore and Mrs. C. A. Moore, of The Hirsel, Coldstream, N.B.

TYRRELL—MEASHAM.—On May 9th, at All Saints' Church, St. John's Wood, by the Rev. C. S. Morton, M.A., Captain E. J. Tyrrell, R.A.M.C., to Grace Mary Measham, B.Litt., daughter of the late Rev. R. Measham, R.N., Rector of Bellingham.

DEATHS.

HILL.—On May 16th, at Warrington-crescent, Maida Vale, Dr. J. Shuter Hill, aged 60 years.

PASSMORE.—On May 21st, at The Cedars, Gainsborough, John Edmund Sanders Passmore, M.R.C.S., L.R.C.P., aged 57 years.

RIVERS-WILLSON.—On May 19th, at Oxford, Alfred Rivers-Willson, Ph.D., L.S.A., L.M.S.S.A.

N.B.—A fee of 5s. is charged for the Insertion of Notices of Births, Marriages, and Deaths.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, May 24th, 1916.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
May 18	30·370	S.W.	...	111	78	54	58	64	Fine
" 19	30·426	S.E.	...	122	74	55	58	62	Fine
" 20	30·306	S.E.	...	129	79	54	59	64	Fine
" 21	30·180	S.W.	...	133	83	61	59	65	Fine
" 22	30·070	S.	...	107	71	64	62	64	Cloudy
" 23	30·150	S.W.	...	117	68	51	51	56	Fine
" 24	29·880	S.E.	...	119	71	54	53	55	Fine

Notes, Short Comments, and Answers to Correspondents.

SUPERSTITION IN WARTIME.

To the Editor of THE LANCET.

SIR,—The prevalence of superstition in wartime is no new occurrence, as the "Angels of Mons" remind us. The following passages from letters on the subject of superstition by Sir Walter Scott, written in the year 1830, seem to me to be worth recording:—

Even in the field of death, and amid the mortal tug of combat itself, strong belief has wrought the same wonder, which we have hitherto mentioned as occurring in solitude and amid darkness; and those who were themselves on the verge of the world of spirits, or employed in dispatching others to these gloomy regions, conceived they beheld the apparitions of those beings whom their national mythology associated with such scenes. In such moments of undecided battle, amid the violence, hurry, and confusion of ideas incident to the situation, the ancients supposed that they saw their deities, Castor and Pollux, fighting in the van for their encouragement; the heathen Scandinavian beheld the Choosers of the slain; and the Catholics were no less easily led to recognise the warlike Saint George or Saint James in the very front of the strife, showing them the way to conquest. Such apparitions being generally visible to a multitude, have in all times been supported by the greatest strength of testimony. When the common feeling of danger, and the animating burst of enthusiasm, act on the feelings of many men at once, their minds hold a natural correspondence with each other, as it is said is the case with stringed instruments tuned to the same pitch, of which, when one is played, the chords of the others are supposed to vibrate in unison with the tones produced. If an artful or enthusiastic individual exclaims, in the heat of action, that he perceives an apparition of the romantic kind which has been intimated, his companions catch at the idea with emulation, and most are willing to sacrifice the conviction of their own senses, rather than allow that they did not witness the same favourable emblem, from which all draw confidence and hope. One warrior catches the idea from another; all are alike eager to acknowledge the present miracle, and the battle is won before the mistake is discovered. In such cases, the number of persons present, which would otherwise lead to the detection of the fallacy, becomes the means of strengthening it.

Of the disposition to see as much of the supernatural as is seen by others around two apposite instances may be quoted:—

The first is from the "Historia Verdadera" of Don Bernal Diaz del Castillo, one of the companions of the celebrated Cortez, in his Mexican conquest. After having given an account of a great victory over extreme odds, he mentions the report inserted in the contemporary Chronicle of Gomara, that Saint Iago had appeared on a white horse in van of the combat, and led on his beloved Spaniards to victory. It is very curious to observe the Castilian cavalier's internal conviction, that the rumour arose out of a mistake, the cause of which he explains from his own observation; whilst, at the same time, he does not venture to disown the miracle. The honest Conquestador owns that he himself did not see the animating vision; nay, that he beheld an individual cavalier, named Francisco de Morla, mounted on a chestnut horse, and fighting strenuously in the very place where Saint James is said to have appeared. But instead of proceeding to draw the necessary inference, the devout Conquestador exclaims, "Sinner that I am, what am I that I should have beheld the blessed apostle!"

The other instance of the infectious character of superstition occurs in a Scottish book:—

"In the year 1686, in the months of June and July," says the honest chronicler, "many yet alive can witness, that about the Crossford Boat, two miles beneath Lanark, especially at the Mains, on the water of Clyde, many people gathered together for several afternoons, where there were showers of bonnets, hats, guns, and swords, which covered the trees and the ground; companies of men in arms marching in order upon the water side; companies meeting companies, going all through other, and then all falling to the ground and disappearing; other companies immediately appeared, marching the same way. I went there three afternoons together, and as I observed there were two-thirds of the people that were together saw, and a third that saw not, and *though I could see nothing*, there was such a fright and trembling on those that did see, that was discernible to all from those that saw not. There was a gentleman standing next to me, who spoke as too many gentlemen and others speak, who said, 'A pack of damned witches and warlocks that have the second sight! the devil ha't do I see'; and immediately there was a discernible change in his countenance. With as much fear and trembling as any woman I saw there he called out 'All you that do not see, say nothing; for I persuade you it is matter of fact, and discernible to all that is not stone blind.' And those who did see told what works (i.e. locks) the guns had, and their length and wideness, and what handles the swords had, whether small or three-barr'd, or Highland guards, and the closing knots of the bonnets, black or blue; and those who did see them there, whenever they went abroad, saw a bonnet and a sword drop in the way."

I am, Sir, yours faithfully,
A MYSTIC.

HEALTH OF ST. LUCIA.

ST. LUCIA, the largest and most picturesque of the Windward Islands group, is situate at a distance of about 90 miles W.N.W. of Barbados, is 24 miles in length, with an extreme breadth of 12 miles, and comprises an area of 233 square miles. According to the annual report of the administrator, the Hon. Gideon Murray, just issued, the estimated population of the island at March 31st, 1915, was 51,590—23,768 males and 27,822 females. The birth-rate in 1914–15 was 33·9 per 1000 of the population, as against 34·5 in the previous year, whilst the death-rate was 18·7 per 1000, as against 17·4. Marriages numbered 225, a decrease of 52 as compared with 1913–14. All the medical officers report the health conditions of the year to have been favourable. The campaign against rats was systematically carried out, 2351 rodents being destroyed, and some useful anti-mosquito work was also accomplished. The use of "millions" fish was continued in practicable places, but as a good part of the year was unusually dry their usefulness was somewhat diminished. A hookworm campaign was commenced under the direction of Dr. Stanley Branch, a local district medical officer seconded for this purpose. The colony is much indebted to the International Health Commission for providing the necessary means to combat this devastating disease, so deleterious to the health and efficiency of the labouring classes. The average annual rainfall for the island, recorded at 24 stations, was 64·88 inches, as compared with 83·75 inches in the previous year, and the mean monthly temperature in the shade at the Botanic Station in Castries was 79·2° F. The Victoria Hospital at Castries is the one general hospital for the colony; it is a fine stone building, well situated, and has been considerably improved of recent years. The daily average number of patients was 76. Small buildings are provided in the out districts at Soufrière, Deanery, and Vieux Fort, which are used as casualty hospitals for accident and emergency cases. The Yaws Hospital at Malgretoute had a daily average of 47·03 patients. The voluntary influx of patients for treatment with salvarsan continued unabated, and 337 cases were treated during the year; the number would have been much greater but for a shortage in the supply of the drug. The medical officer in charge, Dr. A. F. Hughes, reports that out of 745 cases treated by him there had been only 32 instances of recurrence of the disease. In this connexion he refers to the difficulty of distinguishing between bona-fide recurrences and cases of re-infection.

MEDICAL NOTES ON HISTORICAL MANUSCRIPTS.

THE following excerpts are in continuation of those appearing on p. 1066 of our last week's issue.

A Doctor's Claim Resisted.—Robert Walmisley to Mr. Anthony Kempe, 1595, May 9.—I am urged to write unto you in another style than I am wont. I sent my man the other day for a pair of virginals which I lent your children to learn upon; you sent me word I shall have none. You say that I owe you £100, that I am a cosener, a murderer, and that I have killed your wife. Thus you have to my great discredit abused me, such a friend as again you shall never find; abused yourself, being more ungrateful than a gentleman should; and make me recapitulate those things which will be no pleasure for you to hear. ..... First, being commended unto your wife by my good friends, she sent for me to cure her deafness and many other imperfections, when she had been so imperfected ten years before and had passed under the hands of the best physicians in London to no purpose. I perfected her health, brought her hearing, which continued four years till she died, by my continual counsel to preserve it, without any recompense from you; but even in the midst of my cure you used me most unkindly in receiving villainous reports of me, to the intent neither she should be cured nor I receive the reward of my well doing. Yet I, not then knowing what now I do, did in my love towards you in too much humility salve that with great patience; but the canker of your malice remaining, and peradventure being exasperated because I talked with a Jesuit priest in your house which you fostered to absolve you, who persuaded me to forsake my allegiance and not come to the churches here in England, but for this I should have been slain one night late, as you know, by your porter, who in shew you turned away, but presently after entertained him again, belike to do some like exploit, for I have heard somewhat arguing the same. ..... Then when the plague happened in your house, who would come to you but I? Did not all your most professed friends forsake you? But when you sent for me (because I loved you) I came, forsook all my friends and patients in London, only intended your good, preserved you and the rest of your house; yet when did you ever give me one fee or gratify me with one courtesy? but only that you sent for me into the country, where I tarried not long but came to London and was sent for again, your daughter Mary being like to die. So before I slept I returned unto you 50 miles, and saved your daughter's life, being infected with the pestilence. You then requited me I know how. You could not have had a physician in that time for the like cause for £20, yet my love carried me above my strength to satisfy all parts of a friend to you, and then you thought my skill good; but now, behold how you requite me! ..... I once in your gallery at Slindon did but name the seminary priest with whom I talked in your house at Blackfriars; you never afterwards could brook me, neither would you suffer your wife to be quiet till I was gone. Well, away I went, yet ceased not to do you any pleasure I could, and that I did you some I have your letter to shew. A year after, you coming to London, your wife fell sick. I cured her three times, who when she fell into relapse again, her body being weak and her mind sick, you had other physicians that gave her physic till she died (but thereby hangs a tale). In this time of her often sending for me I could never be at home, but with her; the good I had deserved at her hands did so much breed her good opinion of me. Now she is gone, to defraud me you lay unto my charge the having of £100, that I killed your wife, that I am a cosener, and that you will recover it to my shame. Whereas you have thus slandered me, I know what the law will give me in this case; satisfy yourself I will have recompense for my 10 weeks waiting on your wife, &c.

Sir Thomas Sherley to Sir Robert Cecil, 1595, May 18.—My uncle Anthony Kempe, a man that I love exceedingly, is most monstrously abused by a bad fellow, one Walmesley, a very dog leech, who doth practise physic without skill or licence. My uncle intending to make his complaint this day at the Council table will thereby inform you of the cause. My request is that you will be pleased for my sake to favour my uncle in his honest pretences, assuring you he is a most honest gentleman, and for his faith and loyalty towards the Queen's Majesty I dare engage myself as far as I am worth. The gentleman is very aged and even worn to the last; weak of spirit, quiet and softly of disposition; which no doubt hath encouraged that varlet to undertake his lewd practice.

Protest against action of the Company of Surgeons.—Pascall Lane to Sir Robert Cecil, undated (probably after 1596).—He is a surgeon in the parish of Savoy and Liberty of Westminster, who by foreign travel has got experience of the cure of many diseases. Although two years ago, upon the commendation of credible physicians and surgeons, he was licensed to practise by writing under the Archbishop of Canterbury's seal, to which Dr. Stanhope subscribed, yet notwithstanding the Company of Surgeons molest him, affirming none ought to practise surgery within seven miles of London unless he be of their Company or tolerated by them, and threaten to undo him. He prays for Cecil's letters to the Company for his permittance.

Outrage on the Body of a Doctor (1597).—A memorandum (no writer's name) stating that on Sunday, the 19th of April, M. Isaac de Laune, doctor of medicine, residing at Tonnere, in Burgundy, of the Reformed religion, died, respected by all right-minded men. His widow then sent to the "Administrateur" of the hospital to ask leave to bury him in one of the burial grounds within that hospital, where several Protestants had lately been buried, and this was freely granted. When this came to the ears of the dean of the parish of Notre Dame he went to the "Administrateur," with some monks of the hospital, and protested, although the dead man had been familiar with them in his life and was the usual and official doctor of the hospital. The widow and friends accordingly decided to bury the body by night to avoid giving any occasion for complaint. But when in the evening the funeral party were met, both Catholics and Protestants, news was brought that the monks of the hospital were prepared to resist by force the burial of the body, and that the dean, with a lot of bad characters, was about the town for the same purpose. Accordingly it was agreed to make a formal complaint the next day, and that the widow should have the body taken to Fielz, an estate of which she is part-owner, to be there buried. And so the party went away leaving only two women in the house. But the Dean and the mob, being disappointed by this decision, about midnight broke into the house, dragged the corpse into the market place up to the pillory, broke open the coffin, wounded the body with pointed sticks, put cards in one hand and dice in the other, and were about to put the body into the pillory if they had not been prevented by some disapprovers. They then took to insulting the body, threatening to throw it into the river with a paper on its back that this was a Huguenot on his way to England, and abusing it in other ways. In the morning the police and the "Echevins" came, most of whom had been violent partisans of the League; and, to show how little they cared for such matters, they had the body taken up by some peasants and buried without more ado in a dunghill, and did not even allow it to be first placed in the coffin. And then they went back to the widow and demanded payment for their trouble, threatening her that otherwise they would dig up the body and throw it to the dogs to eat; and they even contrived that no justice should be had without appealing to the King.

Distilled Waters.—Dr. W. Mount to Sir Robert Cecil.—From the Savoy, 1597-8, Feb. 8.—I will daily pray for the happy success of your service to your country in this great and ever memorable embassage, and that your goings out and comings in may be, with good health also to your father, comfortably performed. So much in my power may be, with your good leave, by presenting 2 glasses of compound distilled water I do endeavour—the one of cinnamon, the other of sage, both comfortable if at any time in your travel you shall find yourself in health not well affected; one spoonful or two at one time, with half so much sugar.

W. Smith to Sir Robert Cecil, 1599-1600, March 22.—My aged mother, being extremely tormented with a pain in her stomach, which no physic can remove, I would humbly ask you to give her a little of the distilled water which I brought from Florence and delivered to your honour; for I know the same to be of an excellent virtue and hope it will do her good. I have sent a little silver bottle by this bearer for the same.

The Earl of Shrewsbury to Sir Robert Cecil, 1602.—My infective against pancakes causeth my wife to send you a little glass of her cinnamon water, which is so small as you need not fear it will heat you at all, and if you had emptied your stomach a spoonful or two would do very well after it. Inflame it will not, for there is no wine in it, but common cinnamon in borage water only.

Insomnia Cured.—Sir William Cornwallis to Sir Robert Cecil, from Highgate, 11th May, 1599.—Upon Sunday last I was let blood, since which my fever left me and the extreme pain in my head, but I have so weak a stomach as I can taste no manner of meat to restore the ruin that my long abstinence hath made. I live by broths, barley, cream, and sometimes a little jelly. But that which makes me weary of my life, I cannot sleep all night. I have ridden in a furred nightgown round my poor garden this morning and mean to do again to-night, finding the air comfortable, and hope that will bring me to sleep.

The Same to the Same, from Highgate, this Wednesday, May 16, 1599.—Since I took my horse and the air, so weak I was I could scarce sit upon him, yet I found a present strengthening of my stomach. Yesterday (a sick man's fancy) I had a desire to go dine at Barnet, and thither I went, part by coach, part by horse, carrying with me my physician and two or three of my friends, lost £5 at premero, came home, supped like a weak man well, and slept with the medicine of the travel the most part of the night, which I did not before these 18 nights.

"Outward" Medicines for Gout.—Thomas, Lord Burghley, to Sir Robert Cecil, May 18, 1599.—I cannot accompany you to the marriage, as I would have been glad to do, because I have found a famous man that is said to have done very great cures of the gout here, and says that in four or five days he will make my foot as nimble as it was before I had it. I hope not for all his promises, but as his medicines are all outward there is no danger.

Lady R. Cecil's Illness.—Dr. Jo. Nowell to Sir Robert Cecil, 1599, July 23.—My Lady went to bed between 9 and 10; in her bed she took her cordial, which she kept not above half an hour. From 10 till 6 in the morning she hath slept every hour, drinking three times broth this night and other means to refresh her. Her looseness had not troubled her all night. Her water begins to be of a good colour again, with signs of concoction; her legs, being last night somewhat swollen, are now abated, the spot appearing to decay. Her heat is nothing so great as it hath been, neither inwardly nor outwardly. I trust her honour shall do very well; she is so tractable in anything ministered.

(To be concluded.)

THE EDUCATION OF THE ONE-ARMED.

To the Editor of THE LANCET.

SIR,—Can you put me into communication with a medical man having only one arm? I ought to add that my motives for desiring to communicate with him are strictly scientific, as I have suggested by the heading.

I am, Sir, yours faithfully,

May 22nd, 1916. UNIMANUS.

Captain, R.A.M.C.—Section 4 of the by-laws of the Royal College of Surgeons of England provides that the date of the election of Members of the Council shall be announced not less than 30 and not more than 40 days in advance, and that candidates for seats shall send in their nominations within ten days of the date of the announcement. Under the existing rules, therefore, the complete list of candidates cannot be known more than 30 days before the election, and hence the time is insufficient to allow of Fellows residing in remote parts of the Empire to record their votes. The by-law only provides that voting papers shall be sent to Fellows residing in the United Kingdom. Last year many Fellows serving abroad recorded their votes, the voting papers either being sent to them direct from the College or forwarded from their home address. The secretary of the College will send a voting-paper to any Fellow on active service whether ordinarily resident in Australia, Canada, or elsewhere, if he applies for one.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY, Burlington House, London, W.

THURSDAY.—Papers:—Dr. T. J. I'a. Bromwich: The Scattering of Plane Electric Waves by Spheres.—Mr. J. Proudman, Mr. A. T. Doodson, and Mr. G. Kennedy: Numerical Results of the Theory of the Diffraction of a Plane Electromagnetic Wave by a Perfectly Conducting Sphere (communicated by Dr. T. J. I'a. Bromwich).—Mr. G. I. Taylor: Motion of Solids in Fluids when the Flow is not Irrotational (communicated by Prof. H. Lamb).

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Tuesday, May 30th.

PSYCHIATRY (Hon. Secretaries—Bernard Hart, G. F. Barham): at 4 P.M.

Paper:

Mr. H. F. Stephens: The Complustic Reaction in Amentia: an Original Study of 100 Cases.

Thursday, June 1st.

DERMATOLOGY (Hon. Secretaries—A. M. H. Gray, J. E. R. McDonagh): at 5 P.M.

Adjourned Discussion:

On Mr. J. E. R McDonagh's paper on "The Rationale and Practice of Chemotherapy."

WEST LONDON MEDICO-CHIRURGICAL SOCIETY, West London Hospital, Hammersmith-road, W.

FRIDAY.—8 30 P.M., Paper:—Dr. J. Dundas Grant: Some Points of Practical Interest in the Diagnosis and Treatment of Diseases of the Throat, Nose, and Ear.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY.—Clinics:—10.30 A.M., Surgical Out-patients (Mr. B. Gillespie). 2.30 P.M., Medical Out-patients (Dr. T. R. Whipham): Gynæcological Out-patients (Dr. Banister). 3 P.M., Medical In-patients (Dr. R. M. Leslie).

TUESDAY.—2.30 P.M., Surgical Operations (Mr. Carson). Clinics:—Medical Out-patients (Dr. A. G. Auld); Surgical Out-patients (Mr. Howell Evans); Nose, Throat, and Ear Out-patients (Mr. C. H. Hayton). Radiography (Dr. Metcalfe). 3.30 P.M., Medical In-patients (Dr. A. J. Whiting).

WEDNESDAY.—Clinics:—2.30 P.M., Throat Operations (Mr. C. H. Hayton). Children Out-patients (Dr. T. R. Whipham); Eye Out-patients (Mr. R. P. Brooks); Skin Out-patients (Dr. H. W. Barber). 5.30 P.M., Eye Operations (Mr. R. P. Brooks).

THURSDAY.—2.30 P.M., Gynæcological Operations (Dr. A. E. Giles). Clinics:—Medical Out-patients (Dr. A. J. Whiting); Surgical Out-patients (Mr. Carson); Radiography (Dr. Metcalfe). P.M., Medical In-patients (Dr. R. M. Leslie).

FRIDAY.—2.30 P.M., Surgical Operations (Mr. Howell Evans). Clinics:—Medical Out-patients (Dr. A. G. Auld); Surgical Out-patients (Mr. B. Gillespie); Eye Out-patients (Mr. R. P. Brooks). 4.30 P.M., Special Demonstration:—Mr. B. Gillespie: Intestinal Obstruction (illustrated by cases).

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye. Dr. Simson: Diseases of Women.

TUESDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Addison: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations. Dr. Simson: Diseases of Women.

THURSDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye.

FRIDAY.—10 A.M., Dr. Simson: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Addison: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Eye Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

THE THROAT HOSPITAL, Golden-square, W.

MONDAY.—5.15 P.M., Special Demonstration of Selected Cases.
THURSDAY.—5.15 P.M., Clinical Lecture.

ROYAL INSTITUTION OF GREAT BRITAIN, Albemarle-street, Piccadilly, W.

TUESDAY.—3 P.M., Dr. T. M. Lowry: Optical Research and Chemical Progress. (Lecture I.)

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The Chadwick Lectures
ON
TYPHUS FEVER IN SERBIA.

Delivered at the Royal Society of Medicine on Oct. 20th and 29th and Nov. 3rd, 1915,

BY R. O. MOON, M.D. OXON., F.R.C.P. LOND.,
CONSULTING PHYSICIAN, WESTERN GENERAL DISPENSARY, MARYLEBONE, ETC.

LECTURE II.[1]

THE RELATION OF TYPHUS TO PLAGUE.

MR. PRESIDENT AND GENTLEMEN,—It is a customary jest among the laity to say that doctors are always inventing new diseases, and certainly when we consider the ever-flowing stream of jaw-cracking medical terms, together with the increasing output of medical literature, there does seem to be some justification for the complaint. Yet in most cases what appears to be the classification of a new disease is really only the differentiation of that disease from a pre-existing family of diseases. "Omnis determinatio est negatio," said Spinoza—that is, whenever we define a disease we strip away from it the attributes which it does not possess. We are continually dividing up and classifying diseases afresh and giving to them new names as a convenient sort of shorthand. Just as there was a time when people spoke of one kind of rose and the term rose covered a great variety of what we now know to be different species, so there was a time when the term "fever" denoted a great variety of fevers, having doubtless the common characteristics of a quickened pulse, raised temperature, and an increased frequency of respiration, yet each one being an entirely separate entity. To a layman it must seem strange that such diseases as measles and small-pox should ever have been confounded, yet such common diseases were not definitely distinguished until 900 A.D. by the Arabian physician Rhazes in a treatise which has been translated into Syriac, Greek, and Latin. Small-pox used to be regarded as a more severe kind of measles; the technical term "morbilli" comes from the Italian, and means "little disease," as compared with the great disease of small-pox or variola. Like many other things in life, when once we have found the key to the problem we wonder how the mistake could ever have arisen, or how two such dissimilar diseases could ever have been confused. But, as Pascal says, the more intelligence we have the greater is the difference which we perceive in things. In all this question of classification we must beware of deceiving ourselves with words or in applying a name where there is no intellectual concept; in fact, it is this very thing which Mephistopheles in Goethe's *Faust* recommends the medical student to do. With the possible exception of politics, there is nothing in which it is so important as in medicine to realise that words are the counters of wise men and the coin of fools.

Now, typhus was not definitely separated off from other diseases till the middle of the eighteenth century; formerly it had occurred under the general name of fever, and was certainly confounded with plague, to which it has a superficial, but only a superficial, resemblance, the two diseases being in their essence entirely different. Now that we know plague to be due to the bacillus pestis, thanks to the researches of Kitasato in 1894, it is obvious that it has nothing to do with typhus, and yet it would seem to flourish in the same kind of soil; more particularly, dirt, poverty, and overcrowding are favourable to its production, just as they are to that of typhus, but there is not the same connexion between plague and war as there is between typhus and war. The characteristic symptom of plague is the swelling of the lymphatic glands, the glands most usually affected being the inguinal, hence the name "bubonic plague."

The "Plague" of Thucydides.

Going back to quite early times, there is a general consensus of learned opinion that the disease which ravaged Athens in the second year of the Peloponnesian War (430 B.C.), and was described by Thucydides as the plague, was in reality identical with typhus.[2] It is worth while considering in some detail this description by the Greek historian, as it is perhaps the earliest description extant by a layman of a really important disease. We are told by Thucydides that this "plague" first attacked the inhabitants of the Piræus, then reached the upper city, where the mortality became far greater. The crowding of the people out of the country into the city aggravated the general misery, and the newly arrived suffered most, for, having no houses of their own, but inhabiting in the height of summer stifling huts, the mortality among them was dreadful, and they perished in wild disorder. The dead lay as they had died one upon another, while others, hardly alive, wallowed in the streets and crawled about every fountain craving for water. The rapidity of the onset, which Thucydides describes, is very characteristic of typhus, and so, too, are the violent heats in the head, together with redness and inflammation of the eyes. "The sufferers could not bear to have on them the finest linen garment; they insisted on being naked, and there was nothing they longed for more eagerly than to throw themselves into cold water. Many of those who had no one to look after them actually plunged into the cisterns, for they were tormented by unceasing thirst, which was not in the least assuaged whether they drank little or much. They died either on the seventh or ninth day, not of weakness, for their strength was not exhausted, but of internal fever, which was the end of most." This high fever is much more like typhus than plague, for the latter kills its victims earlier than the seventh or eighth day. We are told further by Thucydides that physicians were among the first to be attacked because they oftenest came into contact with the disease. "Some of the sufferers died from want of care, others equally who were receiving the greatest attention. No constitution was strong enough to resist or weak enough to escape the attacks. Most appalling was the despondency which fell upon anyone who felt himself sickening, for he instantly abandoned his mind to despair and, instead of holding out, absolutely threw away his chance of life. The violence of the calamity was such that men, not knowing where to turn, grew reckless of all law, human and divine. The customs which had hitherto been observed at funerals were universally violated, and they buried their dead each one as best he could. Many having no such appliances because the deaths in their household had been so frequent made no scruple of using the burial-place of others. When one man had raised a funeral pile, others would come and, throwing on their dead, first set fire to it, or, when some other corpse was already burning, before they could be stopped would throw their own dead upon it and depart." Thucydides goes on to speak of serious moral changes. Thus "men reflected that life and riches were alike transitory, and they resolved to enjoy themselves while they could and think only of pleasure. Who would be willing to sacrifice himself to the law of honour, when he knew not whether he would ever live to be held in honour? Those who saw all perishing thought that the worship or neglect of the gods made no difference. For offences against human law no punishment was to be feared, no one would live long enough to be called to account. Already a far heavier sentence had been passed and was hanging over a man's head; before that fell, why should he not take a little pleasure?" Plague appears to have been of great antiquity in Egypt, and Cicero tells us that the ibis was considered sacred by the Egyptians because it kept away the plague (*avertant pestem ab Ægypto*).

The Pestilence in the Reign of Marcus Aurelius.

The next historic instance of what was called "plague" in those days took place in the reign of Marcus Aurelius (165 A.D.). It has been described by Galen, and from the close resemblance of his description to the plague at Athens there is little doubt that it also was really typhus. It synchronised with serious earthquakes, tremendous floods, swarms of locusts, and famine. It appears that Syria was the starting-point of the pestilence. In order to suppress a rising of the Syrians an army under Avidius Cassius, later followed by Lucius Verus, whom Marcus Aurelius had associated with himself in the empire, was led into Syria. Prior

[1] Lecture I. was published in THE LANCET of May 27th, p. 1069.

[2] A careful consideration of this subject may be found in a paper read by Dr. R. Crawfurd before the International Congress of Medicine held in London in 1913.

to the conquest of Seleucia the troops had suffered from want and sickness. After the surrender of the town, where 40,000 men had been crowded together, the pestilence broke out among the Romans. According to the story, the Roman soldiers hunting for treasure in the temple of Apollo entered into a small store-room, out of which, through the magic arts of the Chaldæans, the germ of the disease issued forth. This story was carefully spread about by the Chaldæan priests so as to let the sickness appear to be a punishment for the pollution of the sanctuary; at the same time it bears witness to the fact that the contagious character of the pestilence was already recognised. The army of Lucius Verus, with its long train of camp-followers, feasted themselves in Antioch, Laodicea, and the other towns through which they passed, thus spreading the disease far and wide through the provinces of the Roman Empire. On reaching Rome the ravages of the disease were so violent that Marcus Aurelius instituted a general "Lustration," introduced new gods, and ordained a seven-days Lectisternium. Nevertheless the pestilence continued in its virulence, corpses were brought out of the city in cartloads, and the dead from the poorer classes had to be buried at the public cost. Orosius tells us that Rome and the neighbouring provinces became so desolated that here and there whole villages and towns, abandoned by their inhabitants, fell into ruins. Outside the Roman Empire the Germans were affected by the disease, and also Gaul and Scotland. According to Galen, the epidemic lasted 15 years (165–180), at the end of which time the Emperor Marcus Aurelius himself died of the disease. During this long period there is no doubt that some of the cases described by Galen were really cases of small-pox; thus he speaks of the rash coming sometimes in the form of pustules.

Another serious pestilence which seems to have included cases of true plague and typhus, perhaps also diphtheria and ergot gangrene, broke out in 250 A.D. and lasted till 256. During this period there were numerous alarming natural phenomena. Thus, in 251 there was an earthquake in Cornwall; in 253 an eruption of Etna, besides numerous earthquakes in Asia, Africa, and Rome; while many coast towns were overwhelmed by floods. We are told that the disease was spread by clothes, which is more suggestive of typhus than plague, and also by the look, which must have meant the evil eye. An ecclesiastical writer tells us that the pestilence first broke out in Neo-Cesarea, in Pontus, in an overfilled theatre in which games were being celebrated in honour of Jupiter, after the people in an irreverent mood had called on the god to make room for them.

The Justinian Plague: Other Epidemics.

The well-known pestilence in the time of Justinian which continued off and on for a period of 50 years, known as "the Justinian plague" (530–580), doubtless really was true bubonic plague, although some descriptions of it, in particular that by Evagrius, are so like the plague of Thucydides that typhus must certainly have occurred concurrently with it. This great epidemic of the sixth century began in the Delta land of Pelusium, near to Damietta, between the Serbonian Bog and the eastern branch of the Nile, according to Procopius, who is said to have observed its progress and symptoms with the eyes of a physician; it then passed eastwards to Palestine and Syria and westwards to Alexandria. Some towns were attacked so violently that they almost ceased to exist; thus there was great destruction at Antioch in 526, where the pestilence broke out amid earthquakes and fires; 250,000 met their death here. According to Procopius, during the whole of this year the sun looked as though it were in a condition of continual eclipse. He also tells us that the pestilence had such an evil effect upon the morals of the people that there was such general unbridled licence that it seemed as though the disease had only spared the worst of the population.

Both Procopius and Evagrius maintain that immediate contact with those affected did not give rise to the disease, that doctors and attendants on the rich were not more but less attacked, while many who absconded succumbed to it. Modern experience has confirmed these observations, for very few attendants in hospital have contracted plague. At Constantinople it is said that many were attacked by the pestilence after apparitions in dreams or while waking had warned them of their threatening danger.

No facts have been preserved which enable us to estimate the mortality of this plague which lasted for 50 years, but Gibbon as a result of his researches says: "I only find that during three months five, and at length ten thousand persons died each day at Constantinople; that many cities of the East were left vacant; and that in several districts of Italy the harvest and the vintage withered on the ground. The triple scourge of war, pestilence, and famine afflicted the subjects of Justinian, and his reign is disgraced by a visible decrease of the human species, which has never been repaired in some of the fairest countries of the globe."[3]

There is little doubt that the Black Death which ravaged Europe in the middle of the fourteenth century is the same as that which we now know as true bubonic plague; in that overwhelming calamity some 25,000,000, or a quarter of the population of Europe, died from the disease. After that it became established as an endemic disease in England and other parts of Europe, the last appearance in England being in 1665, when 70,000 persons perished.

The pestilence which originated in Cyprus 1505–28 and ravaged almost the whole of Italy was undoubtedly typhus fever; this is probably also true of the disease called "morbus Hungaricus," which raged in the army of Charles V. during the siege of Metz in 1552. At this time the Italian physician Frascatorius gave a description of it, distinguishing it from plague; he called it "morbus lenticularis."

Mode of Spread and Symptoms.

Before an outbreak of plague rats often die in large numbers, and this is regarded by people in China and India as a sign of a coming epidemic. Curiously enough in the Old Testament, in the first book of Samuel, a fatal disease among field mice is recorded which affected the Philistines,[4] and was probably plague. There is little doubt that the virus exists underground before it affects human beings. Contrary to the conditions of typhus, epidemics of plague have often been preceded by a long drought, but, like typhus, all the localities in which plague flourishes are conspicuously filthy; a soil contaminated with decaying animal matter of all kinds would seem to be an essential condition for the vitality of the virus. Like typhus, there is not much communication of the disease through the air.

Owing to the frequent concurrence of plague and typhus such acute observers as Diemerbroech and Sydenham were induced to believe that the one disease might be transformed into the other; the error is not an unreasonable one when we consider that much the same kind of soil is favourable to each disease; thus plague, like typhus, has often followed on famines, wars, and other calamities which produce destitution and a lowered state of health, though, unlike typhus, epidemics of plague have often been preceded by a long drought. Such views, of course, were held long before we knew anything about micro-organisms. Clinically speaking, the raging delirium and the frequent occurrence of gangrene of the extremities, while common in typhus, are rare in plague; the hoarseness and laryngeal catarrh which are frequent in typhus are not a feature of plague. Then, too, we have the rash of typhus and the inguinal swellings in plague to guide us to a correct diagnosis.

There is plenty of evidence in the case of plague that the lower animals may be affected with it, particularly mice, rats, and dogs; house flies and fleas also may convey the disease; whereas there is very little evidence that the lower animals are affected by typhus. In the case of both diseases a second attack and relapses are most rare.

Communication of plague from one person to another in the open air or by casual meeting is very rare, if it ever occurs, and it is certainly not so contagious as small-pox or scarlet fever. Nor does it appear to be conveyed by water. The long life of the organism and the probable infection through the skin make the hygienic condition of the individual, the home, and the community matters of the highest importance. The poorer classes are always the chief, if not the only, sufferers. It was observed in Malta in 1913 that the plague was far less common in the upper storeys of the lofty houses of Valetta than in the basements.

RELATION OF TYPHUS TO RELAPSING FEVER.

Another disease long banished from Western Europe, but which still occurs with fair frequency in Serbia and the Balkan Peninsula, is relapsing fever. Though essentially it is quite unlike typhus fever, yet at any particular stage it may bear a remarkable resemblance to that disease, more

[3] Gibbon, vol. v., p. 346.
[4] I. Samuel, v. and vi.

particularly from the point of view of complications; thus pneumonia and respiratory affections generally together with transient forms of peripheral neuritis are common in both diseases. Practically, however, the great point of distinction lies in the fact that relapsing fever, or "febris recurrens," as it is called on the continent, is a much less serious disease than typhus fever; whereas the mortality of the former is rarely more than 2 per cent., that of the latter may rise to from 30 to 40 per cent. Unless considerable care is taken confusion easily arises in the statistics of these two diseases, so that one may readily get a false conception of what is happening. In the past it has prevailed extensively in Europe, especially in Ireland. It is common in India, where the conditions for its development seem always to be present. In 1869 there was quite an epidemic of it in New York and Philadelphia, thought to have been introduced by Irish immigrants, but only an occasional case has been met with in Great Britain during the past 20 years. Being a far less fatal disease than typhus and of shorter duration, it was at first regarded as a milder form of typhus.

Oddly enough, Hippocrates gives an account of a disease which he had himself observed in the island of Thasos, and which bears a close resemblance to relapsing fever as we know it to-day. But from the time of Hippocrates it appears to have been lost sight of; at least, no mention of any disease at all resembling relapsing fever occurs in medical literature until 1770, when Rutty wrote describing "the weather, seasons, and diseases in Dublin." But for a long time after this it was mixed up with other fevers, and more particularly with typhus, from which it was not finally differentiated till 1826. In that year there was an epidemic of relapsing fever in Ireland, which first appeared among the working classes, who suffered great distress from the stoppage of the factories caused by the war between Turkey and Russia and also from failure of the potato crop.

Now, as we have said before, it seems strange when once we know the distinction between the two diseases to realise how they could ever have been confused. In the one case we have a disease—typhus—characterised by a severe fever lasting about 14 days and with a high mortality; in the other case we have a fever lasting on an average seven days, with one or more relapses or recurrences, which is almost unknown in any other fever, and also a very low mortality; finally, in typhus there is a very characteristic rash, while in relapsing fever there is no rash or only one quite exceptionally. Of course, when confronted with a case, as one frequently was in Serbia, with an entire uncertainty as to the history of the patient, endeavouring to interpret the poor man's complaint out of Serbian, Czech, or Hungarian into German, which was our usual linguistic medium of exchange, the distinction between typhus and relapsing fever is by no means simple. Of this I had some very practical experience on one occasion when I was asked to go to the station at Skoplje to meet a train coming from Nish with 150 sick and there to sort out those suffering from typhus from those with relapsing fever, so that they might be sent to different hospitals. In both diseases alike there would be high fever and rapid pulse, together with flushed face and injected conjunctivæ, also some enlargement of the spleen, which, however, is more noticeable in relapsing fever than in typhus. Speaking generally, from my experience I should say that there is more actual suffering in relapsing fever than in typhus, though the former is a much less serious disease; possibly the greater delirium and general obfuscation of the cerebral faculties may render the typhus patient more oblivious of his sufferings. Striking and troublesome, for instance, as was the feature of "tender feet" in typhus it was more intense and widespread in the cases of relapsing fever. Then, too, there is that curious contrast with regard to pregnant women, whereby gestation is almost invariably brought to an end in the case of relapsing fever, whereas in typhus the gestation is unaffected. Convalescence from relapsing fever is apt to be slow as compared with that from typhus, and it confers but little immunity.

Causation of Relapsing Fever.

Relapsing fever has this particular interest for science in that it was the first specific disease in which the micro-organism known as the spirillum of Obermeier was discovered in 1873. In all probability this spirillum or its spores are given off with the breath or from the skin and are received into the air vesicles of the lungs with the inhaled air; they are not conveyed in drinking-water. It is exceedingly apt to pass from hospital patients to nurses and doctors. It may be transported to a distance by infected clothes, and in Edinburgh in 1843 it was noticed that a large number of laundry-women contracted relapsing fever, though they had no other communication with the sick than washing their clothes and bedding. In many cases it would seem that the contagion is communicated from one individual to another by means of blood-sucking insects, such as ticks, &c.; there are also instances of the disease having been contracted by the handling of the bodies of those who had died from it.

When we come to consider the remoter causes of relapsing fever, or rather the soil which favours its development, we are struck by the large consensus of opinion which regards it as due to poverty, overcrowding, and insanitary conditions. Murchison, who made a prolonged and very detailed study of continued fevers, was of opinion that the teaching of history showed typhus fever to be the pestilence of war, of camps, and of sieges, while relapsing fever is the pestilence of famine. Thus, while relapsing fever is associated specially with destitution,[5] typhus is associated with destitution and overcrowding combined.

The epidemics of relapsing fever of 1817–19 raged during a period notorious in British history for low wages and high prices of food due to the fall of the markets which had been inflated during the continued war; while the epidemics of 1843–44 and 1847–48 occurred about the time of the great Irish famine, and during the general destitution which played so large a part in causing the abolition of the Corn Laws and in preventing their re-enactment.

The German name "Hungerpest" for relapsing fever points unmistakably to the connexion in German opinion between relapsing fever and the existence of destitution. When an epidemic of it occurred in Silesia in 1847 the inhabitants, in consequence of a succession of bad harvests, had been reduced to subsisting upon cloves, grass, mushrooms, and the roots of trees.

In 1870, which is the last time there has been any serious outbreak of relapsing fever in Great Britain, there was an epidemic in Liverpool, and THE LANCET Report on the subject showed that there were three principal causes: (1) The sites of the houses, which were frequently placed on decaying animal and vegetable matter; (2) insufficient drainage; and (3) the extensive prevalence of cellar dwellings in darkened and filthy courts.

Professor Clifford Allbutt in the epidemic of relapsing fever in England in 1870 saw a good many patients who, after contracting relapsing fever and recovering from it in the course of a few weeks, took typhus; he did not see any who had typhus first and then relapsing fever. In the cases in which typhus followed upon relapsing fever in the same patient within a short interval of time it seemed to him that the typhus pursued a milder course than might have been expected had the patient suffered primarily from typhus. He suggests that if ever the micro-organism of typhus is discovered it will be interesting to know whether in genus or in species it is related to relapsing fever, so that the occurrence of one disease may modify the course of the other, as is the case with vaccination and small-pox.

THE RELATION OF TYPHUS TO ENTERIC FEVER.

The last important disease, from which typhus had to be disentangled, so to speak, was enteric fever, which is perhaps better known under the name of typhoid fever. The official name is more satisfactory than typhoid fever, because the latter seems to imply a resemblance to typhus which does not really exist. True it is that they were not clearly distinguished till towards the middle of the last century, and that they have clinically some superficial resemblances, yet they are essentially entirely different diseases. In passing, I might point out for the benefit of the non-medical part of my audience that enteric fever has nothing to do with enteritis, the latter being a somewhat general term for inflammation of the intestinal canal with no reference to any specific disease; thus people may hear of their friends in Flanders or Gallipoli suffering from enteritis, and may be morbidly apprehensive that it is something closely allied to

[5] "Relief of extreme destitution in districts where relapsing fever was prevailing has repeatedly been followed by subsidence of the epidemic, starvation renders persons more susceptible to the contagion, either by weakening the power of the living cells of the body to cope with the invading microbes or by favouring the development of the latter more directly."—Principles and Practice of Medicine, Fagge and Pye-Smith, third edition, vol. 1., p. 132.

enteric fever. Now, the great difference between typhus and enteric fever lies in the fact that, while in the former the disease spreads all over the body, affecting all tissues indifferently, in the case of enteric fever the disease, though also a general disease, has a special localisation—namely, in the glands of the lower part of the ileum and the large intestine. The distinction between these two diseases was a great triumph of morbid anatomy, which in the present day is rather out of fashion. It was, in fact, hardly possible to make this distinction until the holding of post-mortem examinations and the consequent increased study of morbid anatomy became part of the usual routine of hospital work.

The first recognition of enteric fever in England, though, of course, it was not called by that name, was a description given us by Willis of an epidemic which occurred in the Civil War of 1643. Willis appears to have recognised the intestinal lesion as something distinct from either plague or typhus. Baglivi, in Italy, wrote of it under the name of "febris mesenterica," while in Germany Hoffmann, during an epidemic in Halle in 1699, and again in 1728, noted some of the clinical features which separated it from typhus, and described the ulceration of the intestine in fatal cases.

In 1737 Huxham, of Plymouth, drew a sharp distinction between the slow nervous fever, which was obviously enteric fever, and the more acute, malignant fever, which was typhus. Later in the eighteenth century there seems to have been a general recognition of an intestinal fever, which was probably regarded as one variety of the "continued fevers," and though the two types of slow nervous and acute malignant fever were vaguely perceived, no really scientific distinction was made between them.

Final Recognition and Advance in Knowledge of Typhoid.

What seems finally to have led to definite recognition and isolation of the two diseases was the fact that English and American doctors in the first half of the last century studying in Paris, where enteric fever was specially present, on returning to their homes found themselves mainly confronted with typhus, and thus they readily recognised that it was not the same disease as that with which they had become familiar while studying in Paris. The French physicians of that time seeing only the one disease, thought that the intestinal ulcers would be found in all cases of the disease known as jail fever or typhus. But Gerhard, of Philadelphia, who had studied in Paris and there had become familiar with enteric fever, on his return to Philadelphia, when there was an outbreak of typhus (1837), set out clearly the distinction between the diseases and also differentiated them from malarial fever. Thus the distinction seems to have been made earlier in the United States than in any other country.

In England the two fevers were about equally prevalent, and the intestinal lesions were regarded as merely accidental occurrences in certain of the cases; the question was not finally set at rest in England until the work of Jenner (1849–51) proved by a close observation of the two diseases at the London Hospital, with post-mortem examination, their essential difference. But the old views were abandoned slowly and the innate conservatism of the Irish led Irish physicians to maintain the identity of the two fevers even as late as 1861. In Germany Schönlein (1839) proposed the names of "typhus abdominalis" for what we call enteric fever and "typhus exanthematicus" for what we know as typhus; these names are still used by German-speaking people, and these are the names which I was accustomed to write on the bed-letters of the Serbian patients.

We have now much greater knowledge of enteric fever than of typhus. Thus, as far back as 1880 the bacillus of enteric fever was discovered by Eberth as the specific cause of the disease, while that of typhus is still to seek. This bacillus has about the same limits of latitude and longitude as man himself, so that no country or race is known to be immune from the disease. It is indeed dependent on man for its existence, though it may live for a time in water or on various articles, yet its life in such situations is comparatively short; it may be blown about with dust or carried by flies. Even 20 years prior to the discovery of Eberth an English doctor in the provinces—W. Budd, of Bristol—had surmised that the infective agent in enteric fever was to be found in the patient's dejecta; hence, if these could be adequately sterilised the disease might disappear altogether, and, indeed, the rapid diminution of this disease in Western Europe, especially in those countries and towns where sanitary science is most advanced, shows that we need not despair of its total disappearance. Owing to a method introduced by the French physician Widal, we know how to diagnose enteric fever with very great certainty, while the wonderful immunity which our troops have enjoyed from it is largely due to the prophylactic knowledge gained for us by Sir Almroth Wright. Apart from this method of inoculation, the most important means for preventing the occurrance of enteric fever in communities are the securing of a pure water-supply and the effective disposal of excreta. How useful such hygienic measures may be is demonstrated by the fact that in the United States enteric fever is more prevalent in rural communities than in cities, where the sanitary arrangements are so much more efficient. Without wishing to complicate this question unduly, I ought, before leaving this subject, to say that we seem in process of splitting up enteric fever still further, and that there are micro-organisms called paratyphoid A and B which give rise to enteric fever, but with this difference, that the whole disease is of a milder type, its total duration being shorter and the fever showing more marked remissions.

SUMMARY.

We have thus passed in review three important diseases, with which in the past typhus has been frequently associated, and with which it has been often confused. Curiously enough, we have a much greater scientific knowledge of the plague, relapsing fever, and enteric fever than we have of typhus. In each of the three first-named diseases the micro-organism has been discovered, while that of typhus remains still unknown. In spite of this ignorance, we have been as successful in banishing typhus from its favourite habitats as we have been in the case of many other diseases, if not more successful. Practically speaking, it comes to this, that in countries where typhus used to be endemic, in proportion as the knowledge and practice of hygiene and sanitary science have advanced so has typhus receded; consequently, in Great Britain, where sanitary science has been most highly developed, it may be said that typhus has practically ceased to exist. Even then, if we do not discover the specific organism of typhus, but remain in the same position with regard to it as we are in face of measles, scarlet fever, and small-pox, we may yet be able, in other countries where it is still endemic, by improved methods of hygiene, to banish typhus or render it a *quantité négligeable*. And this service in particular we can render to our Allies in the Balkan peninsula by showing them, as indeed we have been doing during the past year, how to avoid the mistakes which we ourselves have made in the past, and how much disease may be got rid of by simple methods, before they have acquired the accumulated capital which renders it possible to build great laboratories for the research into the origin of disease. Just as after the war by exporting capital to Russia we may help much in the development of her industries, so now by exporting, so to speak, our sanitary experience we may be of the greatest assistance to the Balkan peoples.

In speaking of these diseases we have shown how they have all been subject to the process of differentiation—i.e., from what was once regarded as merely "fever" we have differentiated out a number of diseases. Nor has the process come to an end; as we said just now, enteric fever shows signs of being further split up by our expert bacteriologist. This is all part of the evolutionary progress of homogeneity to heterogeneity, as Herbert Spencer defined it. Now the question arises with regard to disease, "Is this process of differentiation to go on for ever, so that we become lost upon a limitless sea of particulars—is there to be no end to analysis?" When we have isolated all the specific organisms of all acute diseases, may there not be an underlying unity and their unifying substratum be found in the soil, so that the ancients in speaking in a general way of "fever," without distinguishing between different kinds of fever, may not turn out to be so far off the ultimate truth. Typhus, doubtless, is a striking instance of how attention to the soil may bring about the practical disappearance of a disease, and this might be extended to other diseases. Continued analysis can hardly be the conclusion of the whole matter; we want a synthesis too, which may enable us intellectually to comprehend the root-essentials of disease.

A CASE OF ACUTE DIABETES.

WITH COMMENTS, ESPECIALLY IN REGARD TO ACIDOSIS.

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THE following are the main facts of the case upon which I propose to comment.

Notes of the Case by Mr. C. H. COMERFORD.—The patient, a boy aged 7 years, was admitted on Jan. 4th, 1916, and remained in hospital only one week, when his parents took him home fearing he was about to die. He was a gentle, quiet child, very thin, and wore a wan and apathetic expression, although his complexion was good and his eyes fairly bright. His parents stated that he was naturally healthy, and had had no previous illness to speak of. He was apparently quite well up to Christmas-time, 1915. It was then noticed that he had to get up three or four times a night to pass urine. There was marked thirst, his appetite became inordinate, while his strength and energy languished. He lay in bed almost motionless, took no interest in his surroundings, the upper eyelids drooped, and he slept a good deal. Emaciation was very marked. The skin was rather dark on the legs and its surface dry and rough, owing to minute horny accumulations at the hair follicles. No complaint of itchiness, no eruption on the skin, and no œdema of the ankles. The tongue was very red and the lips were dry and cracked, while the teeth and gums were normal. Bowels costive, motions large. No physical signs of disease in thorax or abdomen. Cardiac sounds normal; pulse varied from 80 to 100; temperature subnormal. No odour from the breath. As a rule, the patient answered questions intelligently, but the nurse reported that his mind sometimes rambled. The plantar reflex and the knee-jerk were completely abolished, and the cremasteric reflex, usually so active in a young boy, was poorly marked. His appetite was voracious and his thirst excessive and unceasing. Micturition very frequent, and he sometimes passed as much as six pints of urine in the 24 hours; on one day four pints in four hours. Urine always odourless, limpid, and brilliant, showing greenish fluorescence. There was never but the slightest trace of any sediment or deposit whatsoever. No crystals visible under the microscope. The specific gravity varied from 1030 to 1050. Reaction acid. Albuminuria was never found. Sugar very abundant, up to 8·33 per cent. (Dr. Alfred Scott.) By Roberts's differential density method I found from one sample 30 grs. in 1 fl. oz. Specific rotation by polarimeter was 6·25 (Mr. Fearon) corresponding to about 9 per cent. sugar; abundant precipitate with phenylhydrazine test. The urea content was not determined. No crystals of uric acid could be obtained by the addition of HCl either to the fresh or concentrated urine. Mr. Fearon failed to find evidence of the production of *a*-crotonic acid after distillation from sulphuric acid. So rich was the urine in lime that it became opaque white after addition of acetic acid and ammonium oxalate, and there was considerable opacity of phosphates after addition of liq. potassæ. It yielded Gerhardt's reaction with ferric chloride, and developed a fine purple with sodium nitro-prusside and liquor ammoniæ.

The boy's eyes were not specially examined, but there was nothing obviously wrong, and vision was good.

Blood examination by Dr. J. T. WIGHAM.—Red cells, 5,250,000; white cells, 5200; hæmoglobin, 80 per cent. Blood smear appeared normal with due proportion of white cells. Some blood was drawn off and ammonium oxalate added to prevent clotting. The drawn blood separated into two strata. The lower stratum was opaque, dark red. The upper stratum was opalescent, bright red. Both in the fresh blood and in the upper layer of the drawn blood I observed under the microscope numerous spherical refractile globules of various sizes. These stained well with Sudan III., so there was well-marked lipæmia. Dr. Alfred Scott confirmed this observation, using Scarlet R. as a stain. Blood normally contains from 0·2 to 0·3 per cent. of fat.

Diabetes mellitus is uncommon in young children and notoriously runs a more disastrous course than in adults, and especially than cases in middle and elderly life. As v. Noorden puts it: "Infantile diabetes knows no mercy."

Strictly speaking, both glycosuria (or glucosuria) and albuminuria should be regarded not as altogether new events, but as exaggerations of a physiological condition. For it is generally conceded that in healthy normal urine occur traces of (*a*) proteins and (*b*) sugar, or at least reducing carbohydrates (about 0·01 per cent.). The glucose content of normal blood is about 0·05 to 0·15 per cent. In diabetic blood Gardner and Maclean found an average of 0·22 per cent. Even after a prolonged fast sugar is never absent from the blood of the normal animal.

In this communication I restrict my remarks to a few points, and will not attempt a comprehensive survey of a deadly and mysterious affection.

The etymology of the term diabetes has been referred to the Greek word διαβήτης, a siphon. The word also signifies a pair of compasses. The latter is the more plausible idea, derived from the verb διαβαίνω to straddle, connoting the necessity for frequent micturition. Mr. Kennedy, F.T.C.D., informs me that the prefix δια, in Greek, corresponds to *dis*, in Latin, and signifies *separation*.

Nearly 250 years have passed since the sweet taste of diabetic urine was first noticed in Europe by Dr. Thomas Willis (1674). But according to the Ayur Veda (500 A.D.) the saccharine nature of diabetic urine had been known to Hindu physicians from remote times, and in the fifteenth century a disease was described characterised by "honey urine." In 1815 the French chemist Chevreul showed that diabetic sugar closely resembled grape sugar, and in 1848 Claude Bernard proclaimed his fundamental discovery that animals could manufacture sugar, and some years later he demonstrated the glycogenic function of the liver. From that time on the study of diabetes was removed from empiricism and was firmly based upon physiology.

Let us start with a definition of diabetes. Osler's definition in the eighth edition of his "Practice of Medicine," p. 426, runs thus: "A syndrome due to disturbance in the carbohydrate metabolism from various causes, in which sugar appears in the urine, either as a slight and transient condition (glycosuria), or, as a more severe form, associated with thirst, polyuria, wasting, and imperfect oxidation of the fats (diabetes)." In his seventh edition a simpler and better definition was given. I would formulate the definition thus: "Diabetes mellitus is a disease characterised by increased glycohæmia, and by persistent excretion in the urine of sugars derived from faulty metabolism of imperfectly known, and probably various, kinds." This definition is, I think, more concise and more exact, and leaves open for discussion the thesis that there may be several types of diabetes mellitus. Moreover, the definition as stated excludes (*a*) dietetic glycosuria; (*b*) transient glycosuria of corpulent or gouty people (sometimes noticeable only after a principal meal); (*c*) lactosuria of pregnancy, the puerperal state, and in early infancy; (*d*) phloridzin glycosuria (here there is no increased glycæmia); (*e*) adrenalin glycosuria; and (*f*) experimental pancreatic glycosuria—i.e., *complete* extirpation of the pancreas. One-fifty-fifth part of the organ suffices to prevent the development of the symptoms, which show that there is a profound relation between the pancreas and carbohydrate metabolism. The glucose content of the blood may be raised to 0·8 per cent.

The word *sugars* is advisedly used in the plural, for, as a matter of fact, it is well established that several sugars may be concerned in the pathology of diabetes. They fall into three groups: 1. Those with 6 atoms of carbon in the molecule—hexoses, $C_6H_{12}O_6$, or monosaccharides; glucose (dextrose), an aldose; levulose (fructose), a ketose. Levulose may occur along with glucose, and Seegen and others have recorded cases of diabetes where the urine contained only levulose and no grape sugar. The use of starchy foods increased the amount of levulose (Laache, *Harn-Analyse*, 1885). 2. Those with 12 atoms of carbon—bioses, or di-saccharides ($C_{12}H_{22}O_{11}$). Here we meet with the two isomers: Maltose (sometimes concurs with glucose); Lactose. Cane sugar (sucrose) never occurs pathologically. 3. Those with 5 atoms of carbon—pentoses, giving rise to pentosuria ($C_5H_{10}O_5$). It has been shown that, owing to differences in stereo-chemical configuration, only sugars with C_3, C_6, and C_9 atoms of carbon in the molecule are capable of direct fermentation by yeast, and of these only the C_6 group is of interest to the clinical physician. Among the hexoses only the four naturally occurring sugars—viz., *d*-galactose, *d*-mannose, *d*-glucose, and *d*-fructose—are directly fermentable. This is a fact of extreme interest. It follows, therefore, that pentoses are not attacked by yeast. If co-existent with hexoses—e.g., glucose, a pentose could be detected in urine *after*

fermentation with yeast, which destroys only the hexose. After complete fermentation I tested in the foregoing case the urine for pentose by the orcin and phloroglucin tests with negative results. It remains, of course, true that the predominant, and usually the only, sugar present in diabetic urine is glucose.

Notwithstanding a vast expenditure of patient toil and chemical skill, the etiology and pathogeny of diabetes still remain obscure, and I will not spend time upon this intricate, albeit fascinating, inquiry. It is not unlikely to prove true that the prime factors underlying the development of glycosuria are connected with disturbances in the balance of the internal secretions of the body. Neither do I propose to touch upon the morbid anatomy of fatal cases of diabetes upon which we have little satisfactory or illuminating knowledge. I propose to restrict my observations mainly to clinical symptoms and to the conditions observed in the urine. The important subject of treatment must be entirely passed over.

What are the obtrusive symptoms of a fully declared case of diabetes in a young subject? Are they not these? The patient is (*a*) thirsty (polydipsia); (*b*) leaky (polyuria); (*c*) emaciated (autophagia); (*d*) hungry (polyphagia—bulimia); (*e*) saccharine (glycosuria).

We next inquire what are the chief dangers of diabetes. They fall under these heads (cf. v. Noorden: Diabetes Mellitus, 1906):—

DANGERS.	RESULTS.
(*a*) Carbohydrate deficiency.	Lowered nutrition. Carbohydrates are even more essential than fats as sources of body energy.
(*b*) Degenerative changes in the nuclein substances of cells.	Increased excretion of uric acid, and xanthin bases.
(*c*) Abnormal production of acids; derived mainly from breakdown of fats, which are the reserve fund of fuel for active cells.	β-oxybutyric acid. Acetoacetic (diacetic) acid. Coma.
(*d*) Other products of abnormal metabolism.	Excess of acetone. Increased excretion of lime in the urine, and also of phosphates.
(*e*) Diminished resistance to intercurrent diseases. Increased vulnerability of skin, &c.	Tuberculosis. Pneumonia. Various affections of the skin.
(*f*) Chronic degenerative and inflammatory processes in tissues, especially the vascular and nervous systems.	Arterio-sclerosis. Gangrene. Neuralgia. Neuritis. Ocular affections. Albuminuria.

Perhaps the most noteworthy fact in the pathology of diabetes is the wide sweep of changes drawn into the net of the poison or poisons which circulate in the blood and tissues. No part of the body is exempt. From the crown of the head to the tips of the toes there are proofs of ubiquitous mischief-making. Still, it is plain that the most important and familiar clinical symptoms hinge upon perverted metabolism of two groups of foodstuffs—viz., the carbohydrates and the fats, upon which I will make some brief remarks.

Carbohydrates.—A due utilisation of carbohydrate is of supreme importance to the welfare of the body, and it is, moreover, essential to the maintenance of nitrogen equilibrium, for carbohydrates are *sparers of protein*. When the metabolism of carbohydrate is interfered with by complete removal of the pancreas there is a very great rise in the breakdown of body-protein, as is evidenced by the increased output of nitrogen. So that if the tissues of an animal cannot get or utilise carbohydrate directly, they strive to get it willy-nilly from protein, for the cells must and will have carbohydrate food at any price. (Falta, Grote, and Staehelin, quoted by Cathcart, "The Physiology of Protein Metabolism," 1912)

As a practical side-issue in therapeutics, I may point out that Shaffer and Coleman have clearly demonstrated that the "toxic" destruction of body-protein in fevers may be largely prevented by securing the intake of carbohydrate food. This is highly important in the rational treatment of enteric fever, in which disease I have long been convinced that immense mischief is done by the fetish of an exclusively milk diet. The observations of botanical physiologists also support this contention. For example, it has been demonstrated by Hansteen and others that the presence of carbohydrate is absolutely essential before protein synthesis can take place in plants.

It is time now to inquire how stands our knowledge of the metabolism of carbohydrates and fats. If a lump of starch, sugar, or fat respectively is thrown into the fire it is certain that the ultimate and final products of combustion of all three are the same—viz., CO_2 and H_2O. Expressed in symbols we have:—

(*a*) Starch ... ... $C_6H_{10}O_5+6O_2=6CO_2+5H_2O$.

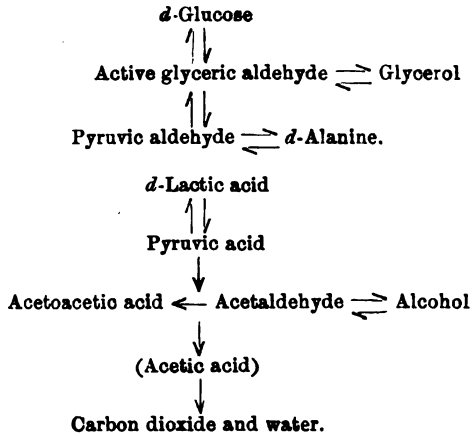
Or, physiologically stated, the respiratory quotient is 1; for $\frac{6CO_2}{6O_2}=1$.

(*b*) Glucose... ... ... $C_6H_{12}O_6+6O_2=6CO_2+6H_2O$.

(*c*) Fat... ... ... $+(O_2)\,n=xCO_2+yH_2O$.

But a physiologist or a physician wants to know more than this. He asks, What are the intermediate stages passed through, and whereabouts are breaks or modifications in the sequence of events to be expected or looked for?

The knowledge we possess as to the metabolism of carbohydrates is due mainly to the work of Embden and Dakin, and their associates. It is summarised by Bayliss as follows ("Principles of General Physiology," 1915):—



Most of these reactions are reversible, as shown by the single-headed arrows, and have been experimentally demonstrated as possible and probable steps. The chemical symbolism of the above transformations is not very difficult to follow, but I will not dwell upon it now.

Fats.—From a clinical point of view, and especially as regards the prognosis of a case of diabetes, the metabolism of fats is even more interesting than the carbohydrate changes. For mainly from fats are derived the group of bodies usually known by the unsatisfactory title of the "acetone bodies"—viz., oxybutyric acid, acetoacetic (diacetic) acid, and acetone. Unfortunately, our knowledge of the stages of fat metabolism is extremely deficient and we are sorely in need of more light. The chemical processes involved in the utilisation of fat are not sufficiently understood to enable one to draw up a table such as that given for carbohydrate.

In diabetes it has been shown that fats may and do break down into less complex acids—e.g., oxybutyric and acetoacetic acids, together with acetone, even when the diet is free from carbohydrate, and is formed exclusively of fat and protein. In the normal organism, an exclusively fatty diet, continued for some days, has been found to give rise to large quantities of these partially oxidised products (Bayliss). In short, the output of the "acetone bodies" affords us practically the only clue to the faulty metabolism of fat (Lang, *Biochem. Journ.*, December, 1915).

Acidosis.

Strictly speaking, any condition in which there is an excessive production of acid radicals can be referred to as acidosis. In rheumatic fever, for example, the urine is strongly acid, and often so persists in spite of the ingestion of considerable amounts of alkalies. There is no proof that the acidosis of fevers gives rise to recognisable clinical symptoms, and the amount of acids so formed is relatively trivial compared with their excretion in diabetes mellitus (Foster).

So far back as 1854 Sir Henry Marsh, of Dublin, referred to death in coma as a sequel of diabetes.[1] The view that some of the worst results of diabetes, notably the liability to sudden and fatal coma, are due to the accumulation

[1] Dublin Quarterly Journal, 1854.

of abnormal acids in the blood and tissues is commonly known as the "acidosis theory."

In severe cases of diabetes it is familiarly known that the urine frequently yields a deep claret-red colour with ferric chloride (Gerhardt, 1865), and this reaction is looked upon as a danger-signal. The red colour is ascribed to diacetic acid, which is usually accompanied by its derivative, acetone, and it is commonly held and taught that the hidden precursor of these bodies is oxybutyric acid. Neither acetone nor oxybutyric acid give any colour reaction with ferric chloride, as is stated in some text-books. I use the word "hidden" to signify that there is no simple, or bedside, test yet known for oxybutyric acid. Its detection and estimation can be effected only by an expert chemist in a properly equipped laboratory. This unlucky fact seriously hampers the clinical physician, and has led to many mistakes and unjustifiable assertions. The physician must, perforce, content himself, as a rule, with the detection of diacetic acid and acetone, for which comparatively simple tests are available.

Let us examine a statement made by Osler: "The occurrence of acetone and diacetic acid in the urine, both derivative products of β-oxybutyric acid, is conclusive evidence that β-oxybutyric acid is being produced in the body."[2] Or shall we follow Dixon Mann, who states that in the absence of diacetic acid it is useless to proceed further in the search for β-oxybutyric acid?[3]

Acetone is a normal constituent of the body fluids, and is stated to occur normally in urine to the extent of from 10 to 30 mgrm., or perhaps from 50 to 60 mgrm. daily, derived, by loss of CO_2, from diacetic acid. The transformation may occur spontaneously in the urine—i.e., on this side of the blood. Traces of acetoacetic acid also occur in normal urine—viz., from 2 to 4 mgrm. in 24 hours (Plimmer). On the other hand, excess of acetone is found in a great number of most diverse diseases.

In vitro Dakin has found that when butyric acid is neutralised and digested at 37° C. (blood heat) with H_2O_2 it yields acetoacetic acid, acetone, and other products. It was found impossible to detect β oxybutyric acid as an intermediate product of oxidation, although this substance is readily oxidised by H_2O_2 to acetoacetic acid and acetone. "It is commonly stated in the books that in the mildest forms of acetonuria acetone alone is excreted; if the condition becomes more marked, aceto-acid appears also; while in still more severe cases, β-oxybutyric acid is added to the other two. It appears now that there is no basis of fact for this statement, which is due to the misinterpretation of qualitative tests and to defects in quantitative methods of estimation."[4]

The occurrence of acetone in the breath of diabetics can be accounted for by the difference in the blood circulation. This is slow through the systemic vessels and lung capillaries through which the blood passes before it goes to the kidney. Venous blood is more "acid" than arterial blood, so that the conditions for the decomposition of acetoacetic acid are most favourable. Acetone is very volatile, and if decomposition occurs during the passage of the blood through the lungs it would pass into the expired air (Plimmer).

A long overlooked fact is that acetoacetic acid is greatly predominant over acetone in urine; and it may be as high as 10 times greater (Kennaway). By dilution (20 times) of the urine with water the acetone reaction may be lost, while the acetoacetic acid, on account of its greater sensitiveness, still reacts to Rothera's test.

It is not at present possible to decide with certainty the question whether acetoacetic acid is invariably accompanied in the urine by oxybutyric acid, but, conversely, Stadelmann and others have observed the excretion of considerable amounts of oxybutyric acid in the absence of acetoacetic acid and acetone. Acetoacetic acid decolourises Lugol's solution; acetone does not. Colourless iodo-acetoacetic acid is formed.[5] Care must be taken not to confound creatinin, a normal constituent of urine, with acetone. Both creatinin (Weyl) and acetone respond to Legal's test; acetone only to Rothera's test.

Our present knowledge justifies, I think, the statement that while oxybutyric acid appears in urine usually in conjunction with diacetic acid and acetone, yet either or both of the two latter bodies may be found apart from the former acid. The chemical relations between them are:—

$$(a)\ CH_3.CH(OH).CH_2.COOH + O \underset{\text{reduction}}{\overset{\text{oxidation}}{\rightleftharpoons}} CH_3.CO-CH_2.COOH\ [+H_2O$$

β-oxybutyric acid. Acetoacetic acid.

This reaction is reversible, and it is possible that the reverse change may be a source of oxybutyric acid in the body.

$$(b)\ \underset{\text{Acetoacetic acid.}}{CH_3.CO-CH_2.COOH} \longrightarrow \underset{\text{Acetone.}}{CH_3.CO-CH_3} + CO_2.$$

This reaction is irreversible.

The tests usually relied upon for detecting acetone are really tests for acetoacetic acid. It is pure assumption to say that oxybutyric acid is never present in urines which do not give the nitroprusside reaction for acetone and aceto-acetic acid. The percentage amount of oxybutyric acid in urine is seldom higher than 0·5 to 1 per cent., although many grammes of it may be excreted in the urine in the course of 24 hours. Magnus-Levy states that he has isolated β-oxybutyric acid from the liver, spleen, muscles, and blood.[6]

Acetoacetic acid and its ester are tautomeric bodies and occur both in the keto and the enol form. The reaction with ferric chloride is due to the enol form, and, therefore, if only the keto form of the acid were present the test would fail. The red solution of ferric acetoacetate is decomposed by boiling and a brown precipitate of basic ferric acetate is formed. Indeed, Dakin and others have shown that the reversible transformation between oxybutyric and acetoacetic acids can be effected in the liver

Table giving Tests for Acetoacetic Acid, Acetone, and Creatinin (modified from the table given by Kennaway).

Reagent.	Author.	Colour.	Given by— Acetone.	Acetoacetic acid.	Creatinin.	Oxybutyric acid.
Neutral ferric chloride.	Gerhardt* (1865).	Clear dark red.	0	+ 1 in 100,000, nearly.	0	0 No colour-test known.
Sodium nitroprusside (recent solution, 5 per cent.) and liquor sodæ (v. potassæ).	Legal (1883).	Red or purple.	+	+	+ Weyl.	—
Sodium nitroprusside and liquor ammoniæ.	Le Nobel† (1884) and Rothera‡ (1908).	Purple or violet.	+ 1 in 20,000	+ 1 in 400,000 (i.e., 20 : 1).	0	—
Lugol's solution (aqueous I and KI) and acetic acid. Chloroform.	Riegler: Lindemann (1901-5).	Iodine decolourised.	0	+	0	—
Picric acid and liquor sodæ (potassæ).	Jaffé (1886).	Red.	Yellow.	Orange.	+ 1 in 200,000. Johnson.	—

* To avoid confusion it should be ascertained that the patient is not taking drugs which would lead to misleading colour reactions with $FeCl_3$—e.g., salicin, salol, salicylates, aspirin, phenol, or, antipyrin.

† Archiv f. Exper. Pathol. vol. xviii., 1884, p. 6.

‡ Lecturer in Biochemistry, Melbourne.

[2] Practice of Medicine, eighth edition, p. 416.

[3] Physiology and Pathology of the Urine, second edition, p. 115.

[4] Kennaway: Some Notes on the Excretion of Acetone Bodies, Guy's Hospital Reports, 1913, vol. lxvii. (A lucid and excellent paper.)

[5] Cf. Dr. Derham: The Signification of Acetone Bodies in the Urine, THE LANCET, July 31st, 1915, p. 227.

[6] Archiv. f. Experim. Pathol., vol. xlii., p. 188.

of by enzyme action, and that the trend of the reaction depends, among other conditions, upon the oxygen-supply. Much confusion has arisen from ignorance of the fact, first stated by Legal and established by Hurtley,[7] that (Le Nobel's) Rothera's test with sodium nitroprusside and ammonia is given *both* by acetone and acetoacetic acid, and is about 20 times as delicate in regard to the latter. This difference in sensitiveness enables one to form a better idea of the amount of acetoacetic acid present (Kennaway). The test is wrongly fixed in the text-books as one for acetone only. A urine containing 0·01 per cent. acetoacetic acid and no acetone at all will fail to give the ferric chloride colour, while it still reacts to Rothera's test (Kennaway).

Furthermore, it can be laid down that the presence in the urine of acetone and oxybutyric acid is by no means characteristic of diabetes. Oxybutyric acid has been detected in the urine in a number of diverse conditions. Dr. Foster[8] gives a striking experiment in proof of this. Several years ago when fasting was in vogue as a cure for all ills a normal man abstained from all food for five days. The urine was collected by Dr. Foster during the fourth day of the fast. The analysis gave:—

Amount.	Total N.	NH_3-N.	Acetone and diacetic acid.	β-oxybutyric acid.
1410 c.c.	11·42 grm.	1·09 grm. (9·6 %)	0·475 grm.	0·819 grm.

The grade of acidosis represented here is comparable to that found in mild cases of acidosis with diabetes and was induced in this case purely by abstinence from food. In truth, both the fasting man and the acute diabetic are self-cannibals. Any decrease in the alkali value (or relative increase of acidity) of the blood renders the blood less able to retain CO_2, and upon this follows a decrease in the CO_2 content of the blood. The composition of "alveolar air" in the lungs can be measured by the method of Haldane and Priestley.[9] Consequently it would appear that the most scientific method of noting the degree of acidosis in the body consists in determination of the alveolar CO_2 of the lungs, and further observations are most desirable. Normal blood is very near the neutral point in reaction.

The organism possesses two main lines of defence against acidosis: (*a*) The fixed basic radicals, potassium and sodium; (*b*) the neutralising capacities for bases of acetoacetic acid and β-oxybutyric acid are practically identical for their molecular weights differ by less than 2 per cent. (Kennaway). If these bases are not equal to the task an increased amount of ammonia is provided, some of the N-excretion being switched off the normal path of excretion in the form of urea. Hence it follows that increased excretion of ammonia in the urine is a rough index of the degree of acidosis, and this has been shown to be the case in diabetes.

Foster[10] further points out that there are two sources of weakness in the current acidosis theory of diabetic coma. Now one consideration that throws doubt upon the theory is this. The acids concerned occur, it must be presumed, not as free acids, but as salts, in combination with Na, K, ammonia. Sodium is the predominant base. The second weakness in the theory is that the blood in cases of diabetic coma does not invariably show preponderance of hydrogen ions. The blood may *not* be less "alkaline" than normal.

Of 11 cases examined by the electro-chemical method[11] Rolly found the hydrogen ions increased in only three. It is impossible to determine the true *hydrogen ion concentration of the blood* in any other way.[12] So that if further investigations substantiate Rolly's observations some changes in our conception of coma will be imperative. There is no evidence that either oxybutyric acid or diacetic acid exercise any specific toxic action apart from their acidic character. At present all we are entitled to say is that coma may come about by disturbance of the normal delicate adjustment of acid and basic radicals in the blood and tissues without postulating an excess of hydrogen ions in the blood.

[7] THE LANCET, April 25th, 1913, p. 1160.
[8] Diabetes Mellitus, 1915, p. 137.
[9] This method is described and illustrated in Barcroft's valuable book, the Respiratory Function of the Blood, Cambridge, 1914, p. 309.
[10] Loc. cit.
[11] Bayliss: General Physiology, p. 190.
[12] Münch. Med. Wochenschr., 1912, vol. lix., p. 1201.

Summary.

The foregoing inquiry appears to me to justify the following propositions:—

1. There is no simple direct test for oxybutyric acid at our disposal. Its détection can only be effected indirectly. Barium oxybutyrate forms long needle-shaped crystals (W. Caldwell) which are doubly refracting.

2. Neither oxybutyric acid nor acetone gives any colour reaction with ferric chloride. Oxybutyric acid has no reactions in common with acetoacetic acid. Hurtley's method for its quantitative determination by extraction with ether and estimation by titration and optical rotation is described in Plimmer (loc. cit., p. 597).

3. For acetoacetic acid[13] three tests are available:—(*a*) Gerhardt's: Not very sensitive; hence much misapprehension. Failure of the ferric chloride reaction does not entitle one to state that acetoacetic acid is completely absent. (*b*) Rothera's test: Reacts with both acetone and acetoacetic acid. The latter is more sensitive to the test than acetone, in the ratio 20 : 1. One part of acetoacetic acid in 400,000 gives the reaction in five minutes. (*c*) Riegler's test: Differentiates acetone and acetoacetic acid. Method of applying the test: 10 c.c. of urine are acidified with five drops of 30 per cent. acetic acid, and five drops of Lugol's iodine solution are added. This mixture is shaken with 2 or 3 c.c. of chloroform. No colour appears if acetoacetic acid be present (Plimmer).

$$CH_3COCH_2COOH + I_2 = CH_3CO \cdot CHI \cdot COOH + HI.$$

Iodo-acetoacetic acid (colourless).

I have no experience of Arnold's test (para-amino-acetophenone) and little of Hurtley's purple test (iso-nitroso-acetone).[14] They are more complicated and appear to be scarcely necessary. Plimmer, however,[15] considers that Hurtley's reaction is very useful for gauging the amount of acetoacetic acid in a solution or in urine.

4. Acetone does not respond either to Gerhardt's or Riegler's test. Its reaction with Rothera's test is similar to that of acetoacetic acid, but is less sensitive. The sensitiveness of Rothera's test is increased by the addition of a solid ammonium salt (sulphate or chloride). The best way of employing it is this: Over a layer of the salt the urine is floated, and then tested as usual with nitroprusside and ammonia. I can confirm the value of this modification. I found that a specimen of diabetic urine preserved for nearly four weeks still gave a distinct red with $FeCl_3$. When diluted to 1 in 10 it scarcely reacted to the iron test. It failed to respond to Lugol's test, or to Le Nobel's (Rothera's) test until layered over solid $(NH_4)_2SO_4$, when a bright purple-red zone developed. It is stated in Neubauer-Huppert[16] that acetoacetic acid disappears from urine at latest in 48 hours.

5. The amount of acetoacetic acid in urine is usually considerably greater than that of acetone—viz., from 2 to 10 times as much (Plimmer). There are two sources of acetoacetic acid in the urine: (*a*) preformed; (*b*) derived from intravesical decomposition of oxybutyric acid.

6. There is no simple and reliable test at present known for the detection in urine of small amounts of acetone in association with acetoacetic acid.[17] Many data published in connexion with acetonuria are vitiated by ignorance of this fact. Scott-Wilson's method of detecting and estimating acetone alone by conversion into a keto-mercury-cyanide precipitate is described in Plimmer (p. 592).

7. Rothera's test differentiates acetone from creatinin. Creatinin reacts with sodium nitroprusside and either liquor potassæ (sodæ) or liquor ammoniæ. Acetone reacts only with nitroprusside and liquor ammoniæ.

8. The term "acetone bodies" (or "acetonuria") is not a happy one, for it lays stress on the least important member of the triad. Since acetone alone is not infrequently met with in urine, perhaps it would be well to indicate that fact by *acetonuria*, and to use the term *acetouria* for the cases in which acetoacetic acid occurs.

[13] I am indebted to Professor W. Caldwell for a specimen of ethyl-acetoacetate which answers admirably for checking the tests.
[14] Cf. Kennaway and Hurtley, loc. cit.
[15] Pract. Organic Chem., p. 122.
[16] Analyse des Harns, I., 268.
[17] Frommer claims that his test with solid caustic soda and salicyl-aldehyde (purple-red) is specific for acetone only, but according to Bohrisch acetoacetic acid also responds. (Neubauer-Huppert, Analyse des Harns, 11te Aufl., 1910.)

9. The theory of "acidosis" is still incomplete. The modes of origin of "acetonuria" are complex, and are largely influenced by the amount of carbohydrate food assimilated.

10. For the solution of such difficult problems the coöperation of clinical physicians and experts in organic chemistry is essential.

Appendix.

Examples of errors and inaccuracies culled from text-books on medicine and on urinary analysis.

1. Acetone gives a red colour with ferric chloride. This error occurs in Fagge, "Practice of Medicine," edited by Pye-Smith, 1888; and also in Roberts's "Treatise on Urinary and Renal Diseases," fourth edition, 1885. Gerhardt's test for acetoacetic acid was described in 1865.

2. Other substances (than acetoacetic acid)—e.g., formic, carbolic, and salicylic acids—give the *same* reaction in both fresh and previously boiled urine. For *same* read *somewhat similar*. No practised eye would confound the colours.

3. Both oxybutyric acid and acetoacetic acid react similarly with the ferric chloride test. This is not the case.

4. "Fehling's solution is reduced by acetone, but this test should be applied to the distillate from the urine." Acetone does not reduce the copper solution.

5. Rothera's nitroprusside test is true for acetone only. It is a much more sensitive test for acetoacetic acid.

6. Many drugs produce temporary diabetes. For *diabetes* read *glycosuria*.

7. "Large quantities of water are required (by the patient) to keep the sugar in solution, and for its excretion in the urine." Glucose is soluble in its own weight of water. The quantity of glucose in the blood of a severe case of diabetes is a fraction of 1 per cent.

Dublin.

TREATMENT OF SEPTIC WOUNDS, WITH SPECIAL REFERENCE TO THE USE OF SALICYLIC ACID.

NOTES BASED ON CASES AT THE MILITARY HOSPITAL, ENDELL STREET.

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THIS paper is based upon observations made upon approximately 1000 cases of septic wounds treated in the wards and operating theatres of the Military Hospital, Endell-street, during the period of six months from May to October, 1915. With the exception of a few cases from Gallipoli, all the men belonged to the British Expeditionary Force in France, and the majority were admitted to the hospital a few days after they were wounded.

While anaerobic infection was comparatively rare, septic infection was present to a varying degree in all the wounds. In order to test the effect of treatment on the bacterial growth in the wounds numerous agar cultures were made. The usual procedure has been to take cultures from the surface of the wounds, before and immediately after the dressings, each morning on successive days. After overnight incubation at 37° C. the relative number of colonies which developed on these cultures was noted. When wounds are irrigated with reagents such as hydrogen peroxide, weak solutions of perchloride of mercury, carbolic or boric acid lotion, there is often little difference to be noted in the number of colonies which develop on the cultures taken before and after the dressing or from day to day. For this reason the efficiency of many antiseptics when applied to wounds has been questioned, and it is evident that with reagents such as these the action of the lotion is often largely mechanical.

Many of the cases on admission were treated with hypertonic saline solution, either with continuous irrigation or with wet applications repeated two or three times a day. A preliminary test was made to determine the extent of bacterial growth which occurs in a nutrient medium containing varying quantities of salt. The organisms used were the staphylococcus pyogenes aureus and the bacillus coli communis, and cultures were grown in a series of broth tubes containing from 0·5 to 12 per cent. sodium chloride. Quantitative estimations were made of the number of living bacteria added to the culture tubes and the number present after varying periods of incubation. With both micro-organisms proliferation occurred in 5 per cent. salt broth—i.e., in the strength of saline usually employed for surgical purposes; this was, however, much less rapid than in the lower salt dilutions. For example, in broth containing 5 per cent. saline staphylococcus pyogenes aureus increased after 24 hours incubation at 37° C. from 9 millions to 77 millions, and after three days to 708 millions. In broth containing 0·5 per cent. saline staphylococcus pyogenes aureus increased in 24 hours from 9 millions to 435 millions, and in three days to 1012 millions. In the 7 per cent. and 8 per cent. salt media multiplication was still further delayed. In the 10 per cent. and 12 per cent. salt cultures no proliferation occurred; the cultures of staphylococcus pyogenes aureus were still alive after 24 hours, but those of bacillus coli communis were sterile. It follows that when 5 per cent. hypertonic saline is applied to a wound the inhibition of growth due to the salt alone can only be very slight.

The majority of septic wounds heal rapidly if good drainage is provided and frequent dressings are applied. The choice of lotion seems immaterial provided the one selected is non-irritating and fresh infection is prevented. The ultimate recovery of the patient depends upon physiological processes, and if preference is given to any of the above reagents for routine treatment it would be to that which reinforces the physiological processes in the tissues of the wounds—viz., hypertonic saline solution.

In certain cases treatment with the so-called antiseptic lotions and hypertonic saline was not successful, and it was recognised that some improved method was required. The plan adopted was to select a few wounds which did not yield to ordinary treatment. These cases were made the object of a special investigation. Two antiseptic reagents were tried: (1) Eusol, as introduced by Professor Lorrain Smith and his collaborators[1]; and (2) salicylic acid.

Treatment with eusol.—In eusol we possess a valuable and cheap antiseptic. In our experience the immediate effect of eusol is to sterilise the surface of the wound with which it comes in contact. Cultures taken directly after irrigation remain sterile. Numerous colonies, however, will develop on cultures taken after an overnight interval, and there is often no reduction of bacterial growth from day to day. The effect of the eusol is temporary only, because of the infection of the deep tissues. This is well recognised, and to meet the difficulty frequent application or continuous irrigation has been advised. In some cases, however, it is not easy to arrange for continuous irrigation, and whatever contrivance is adopted there is a tendency for the lotion to flow through certain channels to its exit, with the result that large areas of the wound do not get irrigated. In spite of these disadvantages, the clinical results obtained from eusol are very encouraging, and some cases have responded more rapidly to it than to other reagents. The following case illustrates its use:—

CASE 1.—Private, aged 19. A large abscess of the calf of the leg was opened; the pus grew staphylococcus pyogenes aureus. The cavity was irrigated with eusol and packed loosely with gauze soaked in eusol. Irrigation and the dressing were repeated twice daily, and each morning cultures were taken from the wound immediately before the irrigation. A series of cultures were thus obtained. From the first to the sixth day numerous colonies grew, and the cultures were indistinguishable from one another. On the seventh day there was a marked reduction in the number of colonies. On the eighth day only two or three colonies developed, and the subsequent healing of the wound was rapid. This series can be explained by the fact that free exudation from the abscess during the first six days diluted the eusol and washed it away from contact with the tissues. It was only when the exudation ceased that the antiseptic remained in contact sufficiently long for its action to be evident after an overnight interval.

In cases where eusol has not been a success the failure was apparently due to the fact that continuous treatment was impossible, and the effect of the antiseptic was transitory. Very little reagent is left in contact with the

[1] Brit. Med. Jour., July 24th, 1915; THE LANCET, Feb. 5th and 12th, 1916.

surface of a well-drained wound after irrigation with a watery solution. Treatment with salicylic acid in various forms was therefore tried, in some cases with conspicuous success.

Treatment with salicylic acid.—The examination of healing wounds shows that the presence of a certain number of bacteria need not be detrimental. In many instances rapid healing occurs in spite of their presence. Healing is usually not delayed unless exudation collects or the bacterial growth becomes sufficiently plentiful to liberate toxin or to produce ferments which digest the tissues. A continuous inhibition of bacterial growth may be more effective than the action of a powerful but transitory reagent. Salicylic acid is not such a powerful antiseptic as the hypochlorites, but it lends itself to continuous administration. Its properties as an antiseptic are well known, and it has recently been recommended by Sir William Watson Cheyne and his collaborators for use as a powder mixed with boric acid for a first field dressing. It is a light powder, feebly soluble in saline solution. If applied to a wound in a crystalline form it does not dissolve sufficiently freely to cause necrosis. Tested with a Ponder's film, salicylic acid is a positive chemiotactic agent. It is also a lymphagogue.

The method has been to keep a saturated solution of salicylic acid in alcohol and to add a little of this to the last funnelful of saline solution with which the wound is irrigated in a proportion of 2–3 drachms to a pint. If applied in this way suspended in saline solution the crystals can be deposited over the surface and reach every part of the wound. They pass into solution slowly and exert a continuous bactericidal action. This method has the advantage that drainage-tubes can be used and free exit for discharge maintained. Dusting the wound with the dry powder has the disadvantage that the crystals float and do not reach deep crevices.

If the crystalline deposit reaches all parts of the wound where exudation is being discharged an immediate diminution occurs in the number of living bacteria on the surface of the wound. This decrease in the number of colonies occurs even when the cultures are made 24 hours after the last dressing, and this change in the bacterial flora is associated with a diminution in the amount of pus and usually with an improvement in the patient's general condition.

Salicylic acid may cause smarting, which usually subsides quickly, and in contact with blood it produces dark-brown acid hæmatin, which has an unpleasant appearance. These slight disadvantages do not, however, detract from its value as an antiseptic.

A thick paste of salicylic acid in sterile saline (1 gm. acid, 9 c.c. saline) has been used for the cut surfaces of long bones in septic amputations. In some cases the stumps have healed by first intention. In others slight sepsis occurred in the muscular flaps. In every case no infection of the bone marrow occurred.

The following cases illustrate the use of salicylic acid as an antiseptic dressing:—

CASE 2.—Private, aged 19. Admitted with septic wound of right knee-joint. The bullet had penetrated the joint and lodged in the outer condyle of the femur. The patient had been in hospitals in France for some weeks previously, and was in a very septic condition. The bullet had not been removed. The knee-joint was drained thoroughly and washed out twice daily with eusol. His condition improved, and sepsis subsided except in the neighbourhood of the outer condyle of the femur in which the bullet was embedded. At a second operation for removal of the bullet it was found that rarefactive changes had occurred leading to the formation of a considerable cavity in the bone, in the centre of which the shrapnel bullet lay. The walls of the cavity were scraped and cleaned with dry gauze and the space then filled with thick salicylic paste, and the external wound closed except for a small drainage-tube which was left in for 24 hours. Dry gauze dressing was applied externally. For the next three weeks no irrigation was employed, the gauze dressings only being changed. The temperature remained normal, and six weeks after the operation an X ray examination failed to show any trace of the cavity in the bone. He made an uninterrupted recovery.

CASE 3.—Private, aged 23. Was admitted with a compound fracture of the neck of the femur and necrosis of the separated head. After weeks of sepsis excision of the head of the femur was undertaken. For ten days following the operation the joint cavity, which was exceedingly septic, was treated with eusol twice daily. The pain and position of the wound prevented more frequent dressing. As the sepsis did not improve eusol was discontinued and the cavity of the joint was filled with a mixture of salicylic acid and saline. Immediate diminution in the discharge and number of bacteria took place, and the patient entered on a slow but steady convalescence.

Salicylic gelatin.—Treatment with salicylic acid in a crystalline form has only been adopted for acute cases and for a short time. In the case of large wounds where the treatment was prolonged, it was thought desirable to diminish the quantity of the drug used. A gelatin medium was therefore made containing salicylic acid 2–4 per cent., in the hope that the viscosity of the mass would help to retain the reagent in the wound. This medium has been used for a large number of cases with considerable success.

The gelatin is prepared in the following way: 300 gm. of gelatin are added to 600 c.c. of freshly made normal saline solution. After melting in the steamer the medium is cleared with egg-albumin and filtered. It is divided into quantities of 100 c.c. and put into glass-stoppered bottles, which are then sterilised at 100° C. for three successive days. Special care must be taken with sterilisation as gelatin is liable to contain tetanus spores. When required for use a bottle is placed in warm water until the gelatin has melted and 2–4 gm. of pure salicylic acid are added. The acid must be added after sterilisation is complete and when the temperature is below 40° C. If the medium is subjected to prolonged heat after the acid is added the viscosity is lost. In 2 per cent. solution the salicylic acid dissolves completely and combines with the gelatin. In 4 per cent. solution some of the crystals remain in suspension. The fluid gelatin is poured into the crevices of the wound either through an irrigating funnel or directly from the bottle, and requires to be repeated daily.

In cases where the medium is retained in the wound it has often been noted that the bacterial flora will change when the treatment commences, pure cultures of streptococci being obtained, after an overnight interval, in wounds which previously grew a variety of organisms. The following cases illustrate the value of this treatment.

CASE 4.—Private, aged 32. Was admitted from a base hospital in France, where a flapless amputation had been performed through the lower third of the left thigh. The wound was very septic. Treatment with saline irrigation and later with strong solution of permanganate of potassium was employed for six weeks. He lost ground. Pus tracked up the muscles of the thigh. Operations were performed for opening sinuses, &c. He became emaciated and cachectic, and finally it was decided that further surgical interference could not be undertaken. At this stage treatment with salicylic acid gelatin was commenced and was applied twice daily. Local reaction was immediate. In a few days the pain ceased, the discharge diminished, and the temperature gradually subsided. Some days later an abscess was opened in the thigh, and after this he made an uninterrupted slow recovery.

CASE 5.—Private, aged 24. Admitted from a base hospital in France, where a flapless amputation had been performed through the middle of the left thigh. The bone was projecting and the wound was extremely septic. After six weeks' treatment with hypertonic saline solution a secondary amputation was done and large drainage-tubes inserted. Three days later the flaps became inflamed and septic. The trouble subsided rapidly under irrigation with peroxide of hydrogen and the application of salicylic gelatin introduced by means of an irrigating funnel.

Conclusions.—The conclusions to be drawn from these observations are:—1. The bactericidal action of many of the so-called antiseptics when applied to septic wounds is negligible. 2. The majority of wounds heal without the application of an antiseptic, provided free drainage is supplied and dressings are changed frequently. Hypertonic saline, in so far as it aids physiological processes, is preferable to many so-called antiseptics. 3. A strong antiseptic, such as eusol, can sterilise the surface of a wound with which it comes in contact, and, if applied continuously, gives excellent results. 4. Salicylic acid applied in a suitable form can often save cases when other methods have failed. It is particularly useful when dressings cannot be repeated at frequent intervals. 5. In all cases where recovery is delayed and the effect of the reagents of doubtful value the treatment should be controlled by making repeated cultures from the wound surfaces.

ON THE ILL-TREATMENT OF GENITAL PROLAPSE.

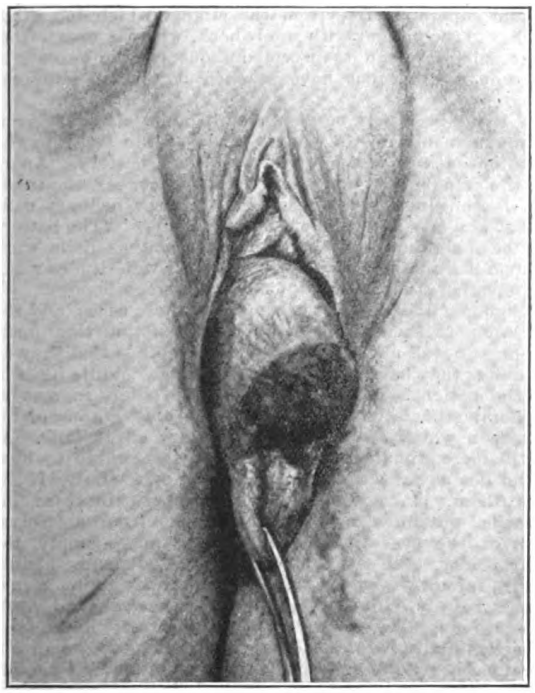
BY W. E. FOTHERGILL, M.D. EDIN.,

SURGEON, ST. MARY'S HOSPITALS FOR WOMEN; ASSISTANT GYNÆCOLOGICAL SURGEON, MANCHESTER ROYAL INFIRMARY, ETC.

THE two photographs (Figs. 1 and 2), illustrating the recurrence of genital prolapse, were kindly taken by Mr. R. S. Paterson in the Gynæcological Unit of the Manchester Royal Infirmary.

Fig. 1 is from a patient, aged 49, who has had several confinements and who reached the menopause three years ago. Her cervix first appeared in the vulvar cleft some 20 years ago, and during the last five years she has had two abdominal operations for this condition without even temporary benefit. The uterus is six inches long, its fundus is fixed to the abdominal wall, and the cervix projects two inches beyond the vaginal outlet. The vaginal roof is considerably inverted from above downwards. There is no cystocele and no rectocele. The case is an example of the use of ventrifixation instead of amputation of the cervix, with excision of the anterior vaginal fornix and perineal repair.

FIG. 1.



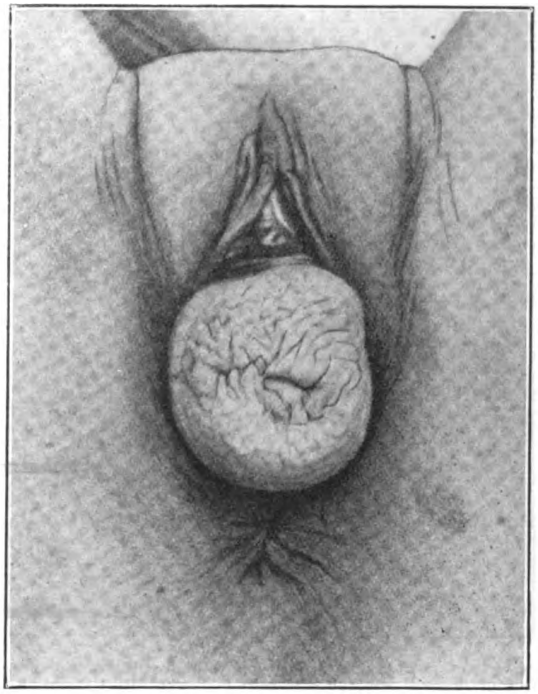
Result of ventrifixation for prolapse.

Fig. 2 is from a patient, aged 53, who has had "falling of the womb" since her first confinement, 33 years ago. The condition was treated by vaginal hysterectomy, which gave temporary relief, but the trouble returned within two years. The vagina is now completely everted and forms a sac which contains bladder and intestine. Thus cystocele is present; but there is no rectocele, the anterior rectal wall being in its normal position. The scar of the vaginal hysterectomy, as seen in the illustration, looks like a transverse os uteri. The case exemplifies the removal of the uterus instead of the removal of the anterior vaginal wall and cervix with repair of the perineum.

It is more pleasant to leave ill alone than to call attention to it; the worker prefers to bring forward improvements and to say nothing against the work of others, and, if something better is offered, bad methods doubtless die out in time. But they are slow to disappear, and a gentle graveward push is sometimes desirable.

Manchester, for some reason or other, has been called "the home of prolapse." Certainly some 600 plastic vaginal operations are done every year at the St. Mary's Hospitals, and from 60 to 70 at the Royal Infirmary. Dealing with patients in these large numbers we are often able to observe the late results of various operations done elsewhere, not all free from risk and mainly German in origin, that are still being used for prolapse in this country. Some of the patients have been subjected to sterilisation and "interposition" of the uterus between the bladder and the anterior vaginal wall. Some have had the uterus removed, not because it was diseased, but because it was loose. Quite a number have had the fundus attached to the abdominal wall by ventrifixation. Others have undergone abdominal operations which aim at using the round ligaments as uterine supports. These patients still complain of cystocele, rectocele, or a combination of the two, of true prolapsus, or of protrusion of the cervix at the vulva with inversion of the vaginal roof. A great many patients, moreover, have worn horrible pessaries for years and have been told that there is no operation which will safely and certainly give them relief. Thus, what with pessaries on the one hand and futile operations on the other, women with prolapse have a lot to put up with. But we need not unduly "hymn their woe, knowing, as well we know, that all can be set right" by plastic vaginal surgery (apologies to Gilbert).

FIG. 2.



Result of hysterectomy for prolapse.

Having expressed these pious opinions, I should perhaps indicate the operations which I consider to be really suitable for the common forms of genital prolapse, which are four in number.

1. *True Prolapsus.*

The uterus, vagina, and bladder are all loose. The anterior vaginal wall appears first at the vulva and is everted from below upwards (cystocele); the cervix follows it, and, in advanced cases, the posterior vaginal wall follows the cervix and so completes the "*procidentia.*" Common in parous women, seldom or never seen in virgins and nulliparæ.

Treatment.—Excise most of the anterior vaginal wall with the front half of the vaginal roof. Remove the cervix also if it is unhealthy or if the uterus is more than three inches long. The writer's method of combining anterior colporrhaphy with amputation of the cervix is useful.[1] (Fig. 3.) Repair the perineum.

[1] Journal of Obstetrics and Gynæcology of the British Empire, July, 1914, and March, 1915.

2. *Long Cervix.*

The uterus is long and loose. The cervix appears first at the vulva and the vaginal roof is inverted from above downwards round the elongated cervix. There is no cystocele. This is the form of prolapse seen in virgins and nulliparæ as well as in parous women. (Fig. 1.)

Treatment.—Excise the front half of the vaginal roof together with the cervix, leaving the uterus three inches long. Repair the perineum.

3. *Cystocele.*

The anterior vaginal wall is everted from below upwards as in true prolapsus, but the uterus retains its normal position. Seen in parous women with defective perineum, but not in virgins and nulliparæ.

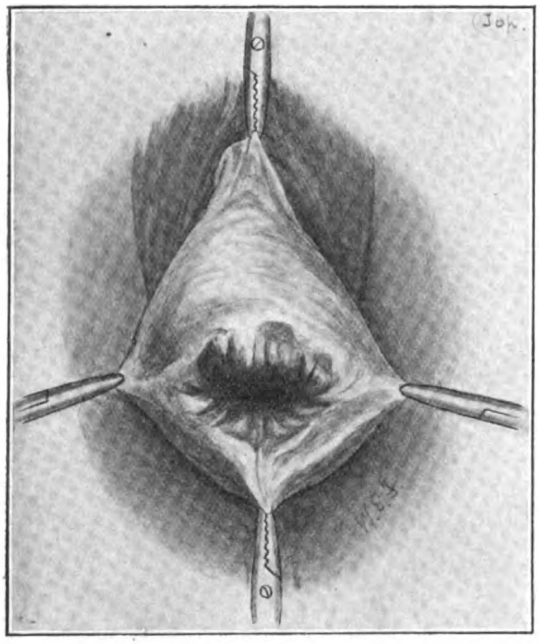
Treatment.—Anterior colporrhaphy and perineal repair.

4. *Rectocele.*

The posterior vaginal wall is everted from below upwards with the anterior rectal wall adherent to it. Seen in parous women with torn perineum, but not in virgins or nulliparæ.

Treatment.—Remove most of the posterior vaginal wall and repair the perineum. The best method is Professor

FIG. 3.



Case of true prolapsus prepared for operation by the writer's method. The incision will join the four pairs of forceps, thus enclosing the anterior vaginal wall, anterior fornix and cervix, which are to be removed in one piece. (Drawing from photograph by Dr. A. W. Mather.)

A. Donald's colpo-perineorrhaphy, which is done from above downwards so as to combine the two operations.[2]

It is hardly necessary to say that the four forms of prolapse occur in various combinations. Thus rectocele may be seen alone, with cystocele, with true prolapsus, or with long cervix and vaginal inversion.

Manchester.

[2] Ibid., March, 1908.

CORNISH CHEESE.—Mr. J. F. Blackshaw, of the Board of Agriculture, recently gave an interesting address to the students at the Cornwall Cheese School, Lelant. He stated that cheese could be made anywhere in Cornwall if the maker had reasonable knowledge and took ordinary precautions with regard to the cleanliness of milk. In each gallon of milk 1 lb. to 1¼ lb. of cheese was obtained by some of the students, but it took about 2½ gallons of milk to make 1 lb. of butter. Consequently they would be doing more good to win the war by making cheese than by making butter. About 80,000 cows and heifers in milk were kept in Cornwall, and if 80 per cent. of the milk in Devon and Cornwall was made into cheese it would go a long way towards supplying food for the British army.

A FACTOR IN THE TREATMENT OF HEAD INJURIES AND ALLIED CONDITIONS.

BY T. E. HARWOOD, B.A. OXON., M.B., CH.B. EDIN.,
RESIDENT OPHTHALMIC OFFICER, THE KING GEORGE HOSPITAL, S.E.

CRILE has shown experimentally that a similar clinical condition with essentially similar pathological appearances in the brain may arise from four different causes: (1) Any exhausting peripheral or central stimulus; (2) cerebral anæmia; (3) psychic causes; (4) poisons, organic and inorganic. An example of the acute phase of this general condition is sometimes seen at or soon after a surgical operation, while the "neurasthenia" that follows a head injury or so-called shell shock represents a more chronic phase. The neurasthenia that follows a head injury is probably the purest of all neurasthenic conditions, in that it may arise instantaneously in a perfectly healthy person from a single cause, though later on other factors may, and probably usually do, help to maintain and even exaggerate it. The existence of a head injury would appear to be too apt to be regarded as *per se* explaining everything that follows, and the sufferer is free from the stigma which too often attaches to the patient with shell shock, whereas apart from the actual injury and its direct consequences the two are in the same position but have reached it by two different routes.

The living body may be compared to an electrical system, and neurasthenia, in the widest sense of the term, to the effects on such a system of an inefficient battery. Apart from the actual injury and its direct consequences, the treatment is concerned with what Sir James Goodhart calls "watts, ampères and volts of nervous energy." The battery must be maintained and strengthened, and as little work put upon it as possible, while the patient's vicissitudes make an interesting study in the light of Crile's experiments.

Asthenopia exists at first in almost all these cases, and the application to them of Weir-Mitchell's dictum that neurasthenics do well unless they have asthenopia is that they do well unless they have persistent asthenopia. While he is in bed the patient's eyes are one of the chief sources of peripheral stimulation, and almost the only organs of his body upon which any constant voluntary effort falls. At first the mere stimulus of light may be intolerable to him, and he lies as far as may be with his eyes shut. If he opens them, blurred and ill-fused images increase his headache, giddiness, and nausea. Apart from an actual lesion of the eyes themselves or their nerve-supply, the visual acuity, even at this early stage, depends mainly on the refractive error. The reason why the images are blurred is chiefly because in his weakened state the neuro-muscular effort necessary to correct his refractive errors and give him clear images is too much for him; in other words, his ocular compensation has broken down. We learn to use our eyes in babyhood, and do not realise the extent of the effort necessary to maintain this compensation. More than this, the child can suppress the image formed by one eye, and after a shock or debilitating illness not infrequently protects himself by ignoring the more blurred image and allowing the eye producing it to wander at its own sweet will. This condition goes on until either he becomes strong enough to maintain the compensation of both eyes, or the task is rendered easier for him by glasses which give him two clear images. The adult is in no such fortunate position. With him binocular vision has usually become an ingrained habit, and he cannot suppress the image formed by either eye. If his compensation breaks down he has to deal with two blurred images, and blurred images are exceedingly difficult to fuse, whereas clear images are probably more easily fused than not. The result is that such a patient either has diplopia or is on the verge of it, and there is a constant effort going on involving three groups of muscles—those concerned with the correction of the refractive error of each eye, mainly, of course, the ciliary muscle, and those concerned with the maintenance of the parallelism of the visual axes. It is doubtful whether a pure paresis of an external ocular muscle ever occurs without a previous paresis of the ciliary muscle, and the treatment of

a paralytic as well as of a concomitant squint lies in the correction of the refractive errors so as to produce two easily fusible images. Nature is apt to treat conditions favouring diplopia by the development of a ptosis. I was recently asked to report on a case of diplopia and recorded the glasses that gave perfect binocular vision, but was told that the information required was which muscle was affected.

Suppose a patient who was in the habit of walking ten miles a day without conscious effort and probably with great benefit, suddenly got a hernia cerebri; no sane medical man would dream of allowing him to attempt his usual walk immediately after his accident. Yet a not dissimilar thing is done habitually by allowing these patients to struggle with the difficulties of binocular vision. If anyone doubts the effort involved in distant vision, he has only to go, say, to the Strand on a sunny summer day and study the different varieties of the frontal wrinkles of the passers-by and the mechanism of their production. He will then realise what this effort may mean to a patient whose nervous energy is at its lowest ebb. If a patient definitely complains of constant diplopia he is almost sure to have one eye covered, but all these patients are on the verge of diplopia and most of them would benefit to a surprising extent by the covering of the eye which produces the more blurred image. This is only an imitation of nature's methods, and automatically cuts out two of the three groups of muscles involved, besides diminishing the sources of peripheral stimulation. Many can see clearly in the distance with one eye when they cannot with two; many can read with one eye but not with two, and there is much relief both to headache and giddiness; care must be taken to prevent too much reading. It is essential to find out which is the right eye to cover, and it should be covered with an interval of a few hours every four or five days until the patient is strong enough to deal with both eyes. When a patient is wearing a head bandage, it should be made to include the more unsound eye; in other cases a comfortable shade should be used. This method is applicable not only to head injuries but to other acute forms of neurasthenia. It has been said that it will be generations before the value of Weir-Mitchell's discoveries in this direction is fully recognised.

For the observation of the frequency of diplopia in these cases at one period or another I am indebted to Deputy-Surgeon-General H. W. G. Doyne, R.N.

A NOTE ON SPINAL ANÆSTHESIA.[1]

BY S. B. GADGIL, F.R.C.S. ENG.,
LIEUTENANT, I.M.S.

IT is very surprising that notwithstanding the fact that spinal anæsthesia was introduced into England by the able advocacy of the late Lieutenant-Colonel A. E. Barker, for the last ten years it has been adopted only by a minority of surgeons in civil practice and by an even lesser number in military practice. I have inquired from different medical men on the subject, and I would like to offer some explanation as to why people feel shy about using this kind of anæsthesia. I propose also to make a few suggestions and invite discussion from those who are experienced in its use. My experience is based on 500 cases, some treated abroad, but most of them in London.

I may summarise the reasons for non-success in the use of the method of anæsthesia in the following way:—

1. *Difficulty in entering the spinal canal.*—This may be due either to nervousness on the part of operators or on that of their patients, whose confidence they have failed to win and who consequently do not keep steady at the time they feel the prick of the needle.

2. *The position in which the patient is placed at the time of introduction of the needle.*—There are two positions in which the needle may be introduced. In the first the patient is required to bend forward while sitting at the end of a table; in the second he lies on one side, always, of course, in fully bent position. I have found it more difficult to introduce the needle into the spinal canal when the patient lies in this second position; the first is, in my opinion, the more convenient.

3. *Position after the anæsthetic is introduced.*—I think that after the injection of the drug the patient is kept with his back propped up too high from the horizontal.

4. *Amount of drug injected.*—The amount of stovaine injected is, in my opinion, generally not sufficient.

5. *The fear of collapse.*—This, I think, unnerves the surgeon because he is aware that the patient is watching his actions with anxiety.

My suggestions to counteract these defects are:—

1. Do not be disappointed if you do not get into the spinal canal at the first attempt; difficulty in this matter is more common than is generally acknowledged.

2. For the novice the position of getting the patient to sit at the end of the table and to stoop over is better than the one of lying down on the side; also in the fully bent position, as stated before. (*a*) Always see that the lumbar spines are quite prominent before introducing the needle. (*b*) Puncture at the upper margin of any of the lumbar vertebræ from the second to the fourth. (*c*) Keep the point of the needle absolutely in the middle line and the whole needle perpendicular to the skin. (*d*) Do not follow the text-book advice, which is to insert the needle a little away from the middle line a little upwards and inwards. In practice I have found that the canal is often missed in following this text-book advice.

3. I always give a full ampoule of the stovaine and glucose solution, which is equivalent to a grain of stovaine, in all adult cases. I have never had any bad effects which I could attribute to a big dose. This full dose does away with the necessity of shaking gently the patient by making him sit and lie down a dozen times for diffusion of the drug, as I have seen done.

4. In some cases when operating only on one side of the body I have found it very useful to introduce the drug when the patient is lying on the side to be operated upon, even when the needle has been introduced while the patient is sitting at the end of the table in a stooping position. I will make this statement more explicit. Say I want to operate on the left knee. I make the patient sit at the end of the table in a stooping position, I introduce the needle into the canal, and when the needle is in, as shown by the escape of the cerebro-spinal fluid, I gently lay the patient on his left side before I introduce the drug. He lies in that position for a minute or two and is then ready for the operation, so that I put him on his back comfortably before starting.

5. I never use this anæsthetic for any operation above the level of the umbilicus. It takes about ten minutes for anæsthesia to spread from the trochanter to the umbilicus, while for rectal operations the effect is immediate.

6. It is unnecessary to test the sensation before starting operation; though protopathic sensibility is lost, epicritic sensation remains for a longer time, and the patient says he feels pain while he is only feeling a light touch.

7. Never introduce the drug unless the cerebro-spinal fluid is seen escaping freely.

8. When operating on abdominal cases or on any very nervous individual I give a hypodermic injection of morphine gr. ¼, atropine gr. 1/100, and hyoscine 1/100, three-quarters of an hour before operation. The patient generally remains asleep during the whole course of the operation.

9. Do not be nervous about the position of the head. Keep the back rest about 30° from the horizontal. This height is quite sufficient. I have seen patients propped up to about 45° or more from the horizontal. The anæsthetic does not diffuse rapidly and the blame for non-success of this anæsthetic is attributed to the unreliability of the drug.

10. When a patient shows signs of collapse, which are paleness, nausea, vomiting, and cold perspiration, do not be perturbed—leave him as he is for the moment, and (1) give him at once liquor strychninæ min. v. hypodermically; (2) raise both legs up in the air, trying to meet the head, as used to be done in order to stretch the sciatic nerves in the old-fashioned way without an operation; and (3) put with the forearms great pressure over the abdomen for five minutes or more. Generally the operation may then be continued within ten minutes.

11. Headache is the only after-result I have met. I tell the patients that they would be quite well next day and I give gr. x. of aspirin as a placebo.

[1] A paper read at a clinical meeting held at a general hospital on Feb. 10th, 1916.

I think a knowledge of the above points would conduce to more frequent use of this most useful anæsthetic. It diminishes the number of assistants absolutely essential for any operation on the lower extremity, and it relieves the anxiety of those who have a great dread of either chloroform or ether.

NOTE ON THE FUNCTION OF THE MEDULLARY NERVE SHEATH.

BY C. E. H. MILNER, M.R.C.S., L.R.C.P. LOND.,
CAPTAIN, R.A.M.C. (T.)

APART from its action as a protective buffer against injury to the nerve fibres there has always existed some doubt as to the function of the medullary nerve sheath, and physiologists have from time to time held different views. The following facts, therefore, which have been observed recently in cases of nerve-trauma due to gunshot wound and one to other causes, appear to me to throw definite light on a question which has hitherto been the subject of some controversy. I quote the following instances as being of clinical significance.

1. *Loss of voluntary physiological excitability in a muscle without loss of faradic reaction.*—During the removal of a shrapnel bullet from the posterior triangle of the neck the spinal accessory nerve was accidentally divided. The cut ends were sutured. The trapezius muscle on that side was immediately paralysed. But its faradic reaction, which was recorded daily, was found to persist until the eighth day.

2. *Return of voluntary physiological excitability without return of faradic reaction.*—(*a*) Two men had received injuries to both the median and ulnar nerves of the left arm, which were found at operation to be so severe that in both cases the nerves were divided cleanly above and below the site of injury, and sutured end to end. After ten weeks of daily massage and electrical treatment some return of movement was observed in the short muscles of the thumb. But there was no return of faradic reaction. (*b*) The same is the case with a small boy who accidentally cut across his ulnar nerve with a penknife 18 months ago. The nerve was sutured end to end. Twelve months after operation all the interossei and adductor pollicis were working well, but failed to respond to the faradic current. Nor do they react to faradism at the present date, 18 months after the original injury and six months after the return of good movement. (*c*) A similar condition of non-return of faradic reaction is to be seen in two cases of severe injury to the brachial plexus. Both were due to violent dislocation of the shoulder-joint. Neither was operated upon, but in both cases extensive paralyses of the arm and hand have recovered in about a year without return of faradic reaction.

The facts recorded above have led me to believe that the medullary sheath acts as a conductor for the *electric* current; while its existence is unnecessary for the transmission of *physiological* impulses, which are dependent solely upon the continuity of the axis-cylinders. In the case quoted of division of the spinal accessory nerve, it was noted that the physiological impulse failed from the outset to reach its destination, whereas the electrical impulse persisted until the eighth day.

Now Marchi's fluid contains osmic acid, which stains fat black, and is used to stain sections of nerves in order to demonstrate the degeneration of the medullary sheath—that is to say, its replacement by fat. But this method is found to be unsatisfactory until about the eighth day after section of the nerve has been performed. This period of time coincides exactly with that which elapsed in my case before the trapezius failed to respond to faradism. It is fair, therefore, to assume that division of the axis-cylinders (even if immediately brought into rough re-apposition) is sufficient to interrupt the passage of the physiological impulse, but that the electrical impulse is interrupted only by complete degeneration of the medullary sheath.

The only way to prove beyond doubt the accuracy of my contention would be to operate again upon the two cases of return after nerve-suture of muscular action without return of faradic excitability and upon the cases of ulnar and brachial plexus injury, and to find microscopically the axis-cylinders regenerated at a more rapid rate than the medullary sheath—i.e., the process in the latter case not yet complete.

In the absence of such possibility I am conscious of the incompleteness of my proofs. But the facts instanced above seem to be of real value in that they are the results of clinical observation.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

RUPTURE OF BLADDER DUE TO RETROVERTED GRAVID UTERUS.

BY JOSEPH E. G. CALVERLEY, M.D. LOND., C.M.G.

IT is on account of the rarity of spontaneous rupture of a healthy bladder from pressure caused by a retroverted gravid uterus that I record this case.

The patient, aged 32 years, had had four children, the last one being born three and a half years ago. The menstrual periods were regular till August 29th, 1915, when they only lasted one day. For a little time there had been complaint of dragging pain and difficulty in micturition, and during the last fortnight some swelling of the abdomen had been noticed. At this time the patient was able to do her ordinary household work, but for the last ten days had had to keep to her bed on account of the pain and swelling of the abdomen and difficulty in passing urine. Some days she could micturate and at other times not, and for the last three days had not passed any urine at all. On Oct. 11th at 5 A.M. she was seized with excruciating pain in the abdomen whilst turning over in bed, and felt that "something had twisted inside." She had slept well that night with the help of morphia pills for relief of the pain. The medical man, under whose care she had been, sent the patient into the Royal Victoria Hospital, Folkestone, with a diagnosis of "twisted ovarian cyst."

An operation was performed seven hours after the onset of the acute abdominal pains. The abdomen contained pints of slightly blood-stained fluid. The uterus, the size of a cocoanut, was firmly impacted in the pelvic cavity below the pelvic brim. The bladder had a rent, measuring 2½ inches, situated to the left side of the fundus, and running in a horizontal direction. This tear was carefully sutured, and the abdominal wound closed except for a large drainage-tube. The patient made an uninterrupted recovery, and was allowed to pass urine naturally after the fourth day. On March 25th, 1916, she gave birth to a male child.

Folkestone.

ANÆSTHETISATION OF TWO CASES OF PATENT DUCTUS ARTERIOSUS.

BY HUGH R. PHILLIPS, M.D. EDIN.,
SENIOR ANÆSTHETIST, ITALIAN HOSPITAL; ANÆSTHETIST, KING GEORGE HOSPITAL, ENDSLEIGH PALACE HOSPITAL FOR OFFICERS, ETC.

THE two following cases seem to me to be worth recording, since I can find no account of any such case from the point of view of the anæsthetist.

CASE 1.—The patient, a young woman aged 20, was a patient of Dr. H. J. F. Simson, and had been seen and treated by Sir James Mackenzie; to both of these gentlemen I am indebted for permission to publish this account. The occasion was that of a first confinement, and the patient had gone to the full time. When I arrived the os was fully dilated, pains were frequent and strong, the pulse was 110, of good volume, and the colour of the face and fingers was pink. I at once commenced the administration by giving a mixture of warmed oxygen passed through chloroform. Anæsthesia was sufficiently deep in eight minutes to permit of forceps being applied. At this time the pulse became smaller in volume, so a few drops of ether were sprinkled on the mask. Immediately the face became dusky and the breathing embarrassed. Oxygen was administered by itself for a few minutes till the colour became normal, and then chloroform was cautiously added. The patient remained comfortable under its influence until the completion of the operation. The length of anæsthesia was 23 minutes. There was no vomiting or after-feeling of nausea. The amount of anæsthetic used was very small—namely, 6 drachms of chloroform and less than ½ drachm of ether.

CASE 2.—The second patient I have anæsthetised on five different occasions, each time for the removal of teeth. He is now aged 44. When only a few months old he was seen by Sir William Jenner, who diagnosed the condition and gave it as his opinion that he would not live long. The patient was seen recently by Dr. Alexander Morison to confirm the condition, and he considers that the chief lesion is probably a defect of the interventricular septum, with patency of the ductus arteriosus. The complexion is always inclined to be dusky, and the fingers are clubbed and blue.

In 1905 Mr. Leonard Matheson removed three teeth. Gas with a mixture of air was administered in the usual way; after a few breaths the face became almost black and the breathing embarrassed. The teeth being loose were easily extracted. Recovery was rapid, and after remaining in the dentist's chair for a few minutes he was able to return home. There were no bad after-effects. The anæsthesia was very short. In 1907 the patient had gas administered again during my absence from town, and apparently it was quite satisfactory at the time, but for some days after he felt ill and unable to do anything.

In 1914 Mr. Edward Harrison saw the patient, and as there was so much pyorrhœa he considered it advisable to remove all the remaining teeth. On the first occasion three were removed at Mr. Harrison's surgery. I administered gas and oxygen with Hewitt's apparatus. The anæsthesia was short and accompanied by no alarming symptoms at the time, but in the evening the patient collapsed and became quite ill. In consequence of this we thought it would be better that he should go into a nursing home on any future occasion. On two occasions at intervals of five days gas and oxygen were given after a preliminary injection of morphine and atropine; the resulting anæsthesia was very short, but there were no disturbing symptoms at the time and no bad after-effects. Four months later there were still 12 teeth left, and the patient was anxious to have them all out at once. A preliminary injection of morphine and atropine was given, and anæsthesia was induced by passing warmed oxygen through chloroform. The colour remained pink and the breathing was regular and quiet. In nine minutes the operation was commenced. After a few teeth had been extracted the pulse became weak, so I passed the oxygen through ether. Immediately the colour became dusky and the breathing ceased. Ether was switched off and the oxygen given by itself, and in a few seconds breathing was resumed and the colour returned to pink. The operation was finished under oxygen and chloroform. In a few hours the patient was perfectly well and seemed better than after any of the previous anæsthetics.

The chief point of interest in both these cases is the immediate effect of the slightest exhibition of ether. Both patients took the mixture of chloroform and oxygen perfectly well, but the substitution of ether at once caused embarrassment of the heart and breathing.

Dawson-place, W.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF DERMATOLOGY.

Exhibition of Cases.

A MEETING of this section was held on May 18th, Dr. J. H. STOWERS, the President, being in the chair.

A warm tribute was paid by Sir MALCOLM MORRIS to the work of the late Dr. W. Allan Jamieson, of Edinburgh, while the loss to dermatology which his recent decease had caused was deplored.

The following cases were shown:—

Dr. GRAHAM LITTLE: 1. Parakeratosis Variegata in a girl aged 18. The disease commenced in 1908 as a sudden and acute eruption on the thighs, spreading within two years to the whole of the body. The patient was also subject to epileptic fits. So far treatment had been unavailing.—Both Sir MALCOLM MORRIS and Dr. J. J. PRINGLE were of the opinion that these cases never get well, but the PRESIDENT drew attention to the fact that X rays removed the itching in those cases in which pruritus was pronounced.——2. Lichen Scrofulosorum with Scrofulodermia in a girl aged 13. The patient had been treated with tuberculin for four years for a patch of scrofulodermia on the chin. The lichen scrofulosorum had appeared only recently and had become considerably fainter since the tuberculin had been stopped.—Dr. H. G. ADAMSON and Dr. J. H. SEQUEIRA both thought that the lichen scrofulosorum was due to the tuberculin, but as Dr. S. E. DORE pointed out it would be extremely difficult to prove that it was not a toxic manifestation arising from the scrofulodermia, since lichen scrofulosorum was frequently seen before the advent of tuberculin.

Dr. PRINGLE: 1. Mycosis Fungoides. The patient was a woman aged 43, and the disease was of six years' duration. The eruption began on the right thigh, simulating parapsoriasis, and in two or three years similar patches affected other parts of the body. On the patches over the scapular regions swellings with ulceration appeared, which improved under X rays. The spleen was not enlarged and there was no lymphadenitis ascertainable. The blood count showed some lymphocytosis and eosinophilia. The Wassermann reaction was positive on two occasions, but there was no history or evidence of syphilis. In view of the blood test the exhibitor intended to treat the case with galyl.—Dr. SEQUEIRA stated that he had noticed cases of mycosis fungoides in which syphilis could reasonably be excluded, the blood of which had given a positive Wassermann reaction.——2. Xerodermia Pigmentosa. This case had been shown at a previous meeting (March, 1914). At that time the patient had a tumour on the left cheek, which had since disappeared under radium. Radium had also produced a very beneficial effect upon some of the other nodular lesions.

Dr. DUDLEY CORBETT: 1. A Case for Diagnosis. The patient was a man who had recently had scrotum and inguinal lymphatic glands removed for carcinoma. One month after the operation a raised inflammatory eruption appeared first on one leg and then on the other. The eruption on the first leg affected had disappeared, leaving venous telangiectases in its place. Most of the members considered that the condition was an inflammatory lymphangitis.——2. Asphyxia Reticularis (Unna). The lesion commenced as a livedo a year ago on the left leg and three months later on the right leg. On the congested areas vesicles appeared, which in time gave place to lichen planus-like papules.—Some of the members thought it was a form of lichen planus, but the consensus of opinion was that the case was one of erythema ab igne.

Dr. G. PERNET: 1. Urticaria Pigmentosa. The patient was a boy aged 7 months, and the chief point of interest in the case was that the lesions were present at birth. 2. A case treated by intramine. A young woman had gummata on both legs, which had healed under two injections of intramine. No oxidising agent had been used afterwards.

SECTION OF OTOLOGY.

Epidiascope Demonstration.—Exhibition of Cases.

AN ordinary meeting of this section was held on May 19th, Dr. ALBERT GRAY (Glasgow), the President, being in the chair.

Dr. J. S. FRASER gave an epidiascope demonstration of a remarkable collection of slides illustrative of the following three conditions: (1) Congenital Syphilitic Disease of the Ear; (2) Secondary Otosclerosis (Ostitis Vasculosa) associated with chronic middle-ear suppuration; and (3) Para-, Peri-, and Endo-labyrinthitis. He contended that there was an analogy between the changes seen in labyrinthitis, paralabyrinthitis, and the changes seen in the ear in the case of congenital syphilis shown. These changes seemed to originate from the middle ear. His idea of the course of events in the case of syphilitic disease of the ear, in its late form, was the occurrence of otitis media. If the case did not run a favourable course the otitis was acute, and the infection spread into the bone of the labyrinth and capsule, and in that way the inner ear was affected. Sudden apoplectiform deafness could be accounted for by a sudden nipping of the ductus endolymphaticus and a raising of the tension. His specimen showed that the condition present was not a neuritis or meningitis in the internal meatus, but a process spreading from the middle ear, just as in chronic suppurative otitis media and in some cases of otosclerosis.—The PRESIDENT, discussing the contribution, said that some years ago he arrived clinically at the view that there was far more frequently an association between suppurative middle-ear disease and otosclerosis than was commonly supposed, but he had never been able to demonstrate it pathologically as Dr. Fraser had now done—he believed for the first time. One frequently saw great deafness in young people in whom all the symptoms pointed to otosclerosis, but in which the lesion was old bilateral dry middle-ear deafness.—Dr. P. WATSON-WILLIAMS said he had always been attracted by the suggestion now elaborated by Dr. Fraser as to otosclerosis being due, at least in some cases, to toxic absorption or to some inflammatory process. In some of these cases he had found a chronic or latent infection of the posterior ethmoidal cells or the sphenoidal sinus, which was evident only on careful investigation.—Dr. DUNDAS GRANT thought the question was a still larger one than that of otosclerosis depending upon the absorption of toxins. There might be a diversity of causes. At one time he thought it

was associated with chronic osteo-arthritis. He asked whether the softening of bone in this condition was great enough to permit of it yielding to the pressure of the Politzer bag applied at the external meatus.—Dr. DAN MCKENZIE said it had often seemed to him that the secretory changes occurring in otosclerosis might not be due so much to a common origin with the otosclerotic changes in the labyrinth capsule, as a secondary effect of abolition of function. He believed secretory changes of that description did occur reflexly at times.

Mr. SYDNEY SCOTT showed a case of Latent Tuberculosis of the Lateral Sinus secondary to chronic suppurating otitis media, with a histological specimen of the sinus contents. At 5 years of age the child was operated upon by a simple procedure for the removal of a mastoid abscess. A sinus persisted, she had attacks of headache, and the tympanic membrane was obscured by pale granulations deep in the meatus. Schwartz's operation resulted in a cure, as there was now no sign of disease a year after the operation.

Mr. E. D. D. DAVIS described a fatal case of Double Acute Otitis Media complicated by ulcerative endocarditis. The patient, a youth aged 16, had discharge from both ears following upon influenza. There were numerous indications in the mastoid and body generally of a septic condition, and operation failed to save him.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

SECTION OF STATE MEDICINE.

Cerebro-spinal Fever in a Military Camp.—London Bills of Mortality.

A MEETING of this section was held on April 14th, Dr. W. A. WINTER, the President, being in the chair.

Dr. G. E. NESBITT read a note on the distribution of cerebro-spinal fever in a military camp. The camp consisted of newly constructed huts and was designed to accommodate about 3000 men. A careful examination of the data did not suggest direct infection as a causation factor.

Dr. T. P. C. KIRKPATRICK exhibited two old London Bills of Mortality for the years 1685 and 1686.

SECTION OF PATHOLOGY.

China Green for Isolation of Typhoid Bacilli from the Fæces.—Exhibition of Specimens.

A MEETING of this section was held on March 31st, Professor E. J. MCWEENEY, the President, being in the chair.

The PRESIDENT made some remarks on the Value of China Green for the Isolation of Typhoid Bacilli from the Fæces. He had not yet succeeded in obtaining perfectly satisfactory results either in plates or as an enrichment method, but he thought the outlook sufficiently favourable to justify him in continuing his work on the subject.

Dr. R. J. ROWLETTE and Dr. W. BOXWELL showed the Abdominal Viscera from a woman aged 62. She had noticed her abdomen enlarging for three months, but had no pain or wasting; for three weeks prior to her death she had vomiting and diarrhœa. The examination showed the omentum to be completely infiltrated by a tumour mass, which also involved the mesentery and the peritoneum covering the right half of the diaphragm; there were small implantations elsewhere on the parietal peritoneum. No primary seat of carcinoma could be discovered. Microscopically the tumour was found to consist of large flat cells, varying greatly in appearance. Some appeared to be actively phagocytic; in many the nucleus was in process of division; no mitotic figures were seen. There were many giant cells similar to those seen in giant-cell sarcoma, and also many multinuclear protoplasmic masses resembling syncytial masses. Cell-inclusions were present. The stroma was scanty; lymph spaces were well marked. Much of the tissue of the tumour was necrotic. The exhibitors regarded the tumour as an endothelioma originating in the peritoneum.

Dr. J. H. POLLOCK showed, amongst others, a specimen of Congenital Syphilitic Cirrhosis obtained from an infant 11 months old, who succumbed to an apparently primary hepatitis.

Dr. G. E. NESBITT showed the kidneys and portion of small intestine from a fatal case of acute abdominal disease in a girl with puzzling clinical symptoms.

LONDON DERMATOLOGICAL SOCIETY.—A meeting of this society was held on May 16th, Dr. J. L. Bunch, the President, being in the chair.—Mr. Christopher Kempster brought forward the following case for consultation. A soldier, aged 36, first came out in a flush rash while in South Africa 16 years ago: this was accompanied with sickness and vomiting lasting from three to four hours, and causing prostration. He was better in three or four days, and then started peeling around the ears and neck. The peeling finally became general, scales coming away in large flakes. He had a second attack six years later, and since then a yearly attack, generally in the spring or autumn. The present attack began on May 5th, and on admission to the hospital he was peeling; his temperature was then 99·6° F., and had been normal since. He had been treated for many diseases, such as, amongst them, scarlet fever, nettle-rash, German measles, and quinine rash. —In the discussion which followed Dr. Morgan Dockrell suggested that the case was one of erythema scarlatiniforme. —Cases were shown by the President, Dr. Morgan Dockrell, Captain W. Griffith, Dr. W. Knowsley Sibley, and Captain C. H. Mills.—Colonel Harrison, R.A.M.C., referred to the treatment of syphilis with intramine and ferrivine, and said that in his experience intramine was only a source of torture to the patient, and even if followed by injections of ferrivine the results were absolutely nil.—The President then read a paper entitled "Dermatitis due to Hair Dyes," and an interesting discussion followed.

Reviews and Notices of Books.

Diseases of the Nose and Throat, comprising Affections of the Trachea and Œsophagus.

By Sir STCLAIR THOMSON, M.D. Lond., F.R.C.P. Lond. Second edition. With 22 plates and 337 figures in the text. London: Cassell and Co., Limited. 1916. Pp. 858. Price 25*s.* net.

ALTHOUGH only four years have elapsed since we noticed in these columns Sir StClair Thomson's text-book on "Diseases of the Nose and Throat," a new edition has been called for. During that short time there has been a steady progress of laryngology and rhinology. Amongst the features of the new edition will be found a description of suspension laryngoscopy—the latest development in the methods of direct inspection of the larynx. A concise description has been given of intranasal dacryocystostomy, an operation which promises cure or relief in many troublesome conditions of the lacrymal apparatus. The nasal route to pituitary tumours is also described. The technique of nerve blocking to obtain laryngeal anæsthesia, the intranasal operation to secure drainage of the frontal sinus, and aspergillosis of the accessory sinuses have all received more adequate attention. The chapter on removal of the tonsils has been entirely rewritten. The *pro et contra* of the tonsillotomy of former days and the tonsillectomy of to-day will be found tabulated, and the modern methods of removal as fully described as is possible in a text-book.

Although the book has been rigorously revised from beginning to end and expanded by some 70 pages and additional illustrations, yet the original character of the work has not been altered, nor has the high opinion we expressed when reviewing[1] the first edition. The book is well illustrated and fully indexed. To the senior student it will be a reliable guide and to the busy practitioner a complete and ready source of reference.

A Text-Book of Operative Dentistry.

By Various Authors. Edited by C. N. JOHNSON. Third edition, revised and enlarged. With 805 illustrations. London: William Heinemann (Rebman Limited). 1916. Pp. 891. Price 25*s.* net.

WE have previously had occasion to comment favourably upon this well-known work on operative dentistry. The editor has had the good fortune to be assisted by men who are thoroughly acquainted with their special subjects. In this

[1] THE LANCET, Dec. 2nd, 1911, p. 1560.

edition we meet with two new chapters, the one on the treatment of impacted lower third molars and the other on the application of the Roentgen ray to dentistry. The chapter on the impacted third molar, contributed by Dr. C. Edmund Kells, contains in full detail the technique he advocates in the removal of these difficult teeth and is well illustrated. It is satisfactory to note that he strongly recommmends the taking of skiagrams in all cases of this character. If this rule were observed in practice many failures to remove these teeth would be avoided and patients often saved an unnecessary amount of suffering. Dr. Kells is also the author of the chapter on the Roentgen ray in dentistry, and here again we have a thoroughly practical account of technique. The editor is responsible for a short but excellent chapter on dental caries, in which he lays great stress on the relation of diet to caries, a relation which is of great importance, and the recognition of which is largely due to Dr. Sim Wallace. The chapter on orthodontics, contributed by Dr. H. A. Pullen, contains a clear presentation of the methods adopted by those who support in all cases the restoration of the teeth to the normal occlusion. Altogether, the volume in its new form well maintains its reputation.

LIBRARY TABLE.

A Practical Guide to the Inspection of Meat and Foods. By A. E. BONHAM. Exeter: William Pollard and Co. 1915. Pp. 120.—The author of this book is the chief sanitary inspector and superintendent of the public abattoirs at Exeter and has also held similar posts in sanitary service at King's Norton, Birmingham, and Norwich. His experience is therefore a wide one, and his book bears evidence of a thorough practical knowledge of the subjects with which he deals, being written, moreover, as a note rather than as a literary manual. But if often the notes are somewhat abruptly written, the instructions given are just what are wanted, and those who are preparing to take up the work of meat and food inspection, as well as those already engaged in such very important work, will find the information very serviceable. The ground covered seems to be complete, and the administrative laws concerning the inspection of meat and food are wisely included in the text.

Poland as an Independent Economic Unit. By STANISLAW POSNER. With an introduction by SIDNEY WEBB. Published by Allen and Unwin for the Polish Information Committee, St. Martin's Lane, London, W.C. Price 6*d*.—The central idea of this "impressive account of the material resources of Poland," as Mr. Sidney Webb calls it, is that there is a natural necessity for the unity of Poland. The partition of Poland was a crime against the people of Poland, but according to Mr. Posner it was equally a crime against the laws of nature, of geology and of geography; this, he states, being the reason why the Polish question has remained unsolved for 150 years. The pamphlet is a plea that the three divisions of Poland should be united once more and the Polish State re-created.

Back to the World. By MARY WALL. London: Chapman and Hall. 1916. Pp. 328. Price 6*s*. net.—The story opens with an admirable situation, one that, on the whole, has been too much for the author. A young wife manifesting weakness of intellect shortly after the age of 20, is taken to an asylum at the age of 24, and is not released for 25 years, when she returns to her husband at the age of 49, and on the eve of the war. The following is a footnote of her case as the author thinks that it would have appeared in our columns. "No. 5932, *Quicklime on Mind*. K. M. Young married woman, aged 23 Treated for Puerperal Mania—unaccountably seized with Acute Mania on her twenty-fourth birthday, passed through normal phases of the malady, but instead of recovering on being worn out and dying of cerebral exhaustion, settled into hopeless insanity. Health normal. But has now been insane for more than 20 years." It would be unfair to tell the plot of a carefully constructed narrative, but we can recommend the book to our readers as interesting, though unequal.

The Night Cometh: A Novel. By PAUL BOURGET. London: Chatto and Windus. 1916. Pp. 247. Price 6*s*. net.—This is a translation by G. Frederic Lees of "Le Sens de la Mort," a novel by Paul Bourget, which was issued last year. The book sets out the problems which suggest themselves to all thinking persons in respect of life after death, but does not deal with them in a particularly satisfactory manner. Certain war scenes are written with Paul Bourget's well-known skill, but on the whole the terror of the situation which he describes will not be realised by the reader.

Vive La France. By E. ALEXANDER POWELL. London: William Heinemann. Pp. 253. Price 3*s*. 6*d*. net.—This is a fine tribute to the patriotism and fighting spirit of our allies. The author has been on the field with the French and describes the struggles in Alsace and the Vosges, in Champagne and on the British lines. The book is simply written and well illustrated. There is little in it that will be new to those who have read regularly the literature of the war, but the facts are put together in a vivid manner and the illustrations are properly explanatory of the text.

JOURNALS.

Lyon Chirurgical. Vol. XII., Nos. 3–6.—One of the points which surgeons have had to revise and alter during the present war has been the treatment of gunshot wounds of the abdomen. At the outset of the war surgeons had a preconceived notion that abdominal injuries were best left alone without operation. Experience gained in the South African War had shown that a patient generally recovered from a wound of the abdomen if he were allowed to rest without the administration of food, the bullet appearing to do little more harm to hollow viscera than making a small hole which soon became glued over with lymph. But in the present war it was soon evident that such happy results were not obtainable, and the reasons are not far to seek. In South Africa almost all abdominal injuries were the result of long-range rifle fire, in which the wounds of entry and exit were not large. The ground was as a rule dry and sandy, and the patient could be picked up and attended to with promptitude and without much trouble. In the present war conditions are very different. The larger proportion of injuries are from shrapnel or portions of shell, which cause multiple and extensive wounds and are rapidly fatal. Bullets are received at comparatively short range, and though the entry wound may be quite small the passage through the abdominal viscera may cause extensive laceration of the intestine, liver, spleen, omentum, or mesentery, resulting in hæmorrhage or peritonitis. Again, owing to the nature of the warfare, injured men cannot be got out of the trenches for many hours after the infliction of the wound, and during that time have to lie in muddy trenches, in soil that has been highly cultivated and manured for centuries, and the clothes through which the bullet has passed are covered with mud. Little wonder is it, then, that the percentage of recovery from abdominal wounds is small, so small, in fact, that the chance of recovery from the wound of a bullet that has actually passed through the abdominal cavity and not merely punctured the abdominal wall is practically nil. In the recent numbers of the *Lyon Chirurgical* a considerable amount of attention has been paid to the question of the advisability of submitting such men to operation with a view of reducing the mortality. There appear to be among the French two schools termed respectively "abstentionistes" and "laparotomistes." On the whole, those who advocate laparotomy seem to have the most satisfactory results. From their accounts it would seem that wounds of the small intestine are by far the most fatal, few surviving operation, but practically none if left alone, which fact tallies very closely with the results of civil practice. It is pointed out very clearly that the possibility of submitting all patients to operation within a reasonable period depends very much on the character of the fighting and the practicability of evacuating the wounded rapidly from the firing line to a place where an established hospital with all the facilities of an efficient theatre can be maintained. In other words, the essential for this work is that the aseptic technique shall be carried out in all its details, and as efficiently as in civil hospitals. After reading the articles it seems clear that in the present stage of the war there are among the French a large number of hospitals close behind the firing line where any abdominal operation can be performed with as great a degree of safety as in any civil hospital, and that it is the opinion of many excellent surgeons that any wound of the abdomen which is not so serious as to be likely to be immediately fatal should be operated on and an attempt made to secure any bleeding point and suture any laceration of intestine. In this way it is considered that the terrible mortality from abdominal wounds may be lessened. In this connexion it is interesting

to turn to the official English "Memorandum on the Treatment of Injuries in War based on Experience of the Present Campaign." Here in the section "Wounds of the Abdomen as Seen at the Front," it is noted that the two chief complications of all abdominal wounds are (1) hæmorrhage and (2) perforation of hollow viscera; and there is no doubt that apart from shock due to extensive visceral lesions the first danger to the patient is hæmorrhage, and that this is a much more frequent cause of death than is peritonitis. It is stated that under the following conditions a primary operation may reasonably be performed: "(*a*) If a patient is seen within 12 to 24 hours from his injury and if his general condition is good; (*b*) if the wounds of entry and exit are near together so as to indicate that only a small part of the whole abdomen has been traversed; (*c*) if by protrusion of omentum or other evidence obtained on examination it is certain that the peritoneum is already opened; (*d*) if the patient is observed to become worse than a few hours previously; (*e*) if the conditions for doing an operation are satisfactory; (*f*) if a rise in the pulse-rate or increasing rigidity of the abdomen occur at a slightly later date provided that the patient is in good condition."

Journal of Cancer Research. Vol. I., No. 1, January, 1916. Cambridge University Press and Williams and Wilkins Co., Baltimore.—The appearance of a new journal devoted to cancer awakens reflections on the necessity for such a journal and its prospects of success. The arrangement followed in this country, and till recently in America, of publication in the existing journals, supplemented by the issue of special reports from the various laboratories, has worked well, and while wishing the new journal success one may be sceptical of the likelihood of such a steady output of first-class work on this subject, of all others, as would justify the new publication. But the first number is full of interest. Miss A. E. C. Lathrop and Professor Leo Loeb contribute, in continuation of their breeding experiments on mice, evidence that castration before the age of six months and consequent elimination of the ovarian internal secretion (corpus luteum) diminishes the incidence of cancer of the mamma. Castration after the age of six months has no effect. Prevention of breeding also diminishes the cancer incidence while raising the cancer age, though to a less degree than castration. This is the opposite of the effect of exclusion of sexual activity on mammary carcinoma in women brought out in the Registrar-General's report of last year. Dr. Stevenson's statistics showed a higher incidence of carcinoma of the mamma in the unmarried than in the married. Dr. F. L. Hoffmann analyses the cancer statistics of the countries in the Western Hemisphere. From the statistical data of very varying quality he draws the tentative conclusion that the cancer death-rate diminishes as we approach the equator. Professor F. C. Wood and E. H. Maclean report the negative results they have obtained in treating animals with transplanted and spontaneous tumours with phloridzin. Professor J. Ewing contributes a very sane but rather conservative review of present-day cancer problems. A clear and well-illustrated account is given by G. L. Rohdenburg and .F D. Bullock of two transplantable sarcomata arising in the walls of parasitic cysts of the rats' liver. The association of tænia cysts with tumour is regarded as evidence of the effect of chronic irritation in the etiology of malignant growths. The last paper in the *Journal* proper is by the editor, Dr. R. Weil, and deals with chemotherapeutic experiments on transplanted rat tumours. After detailing experiments which showed that *intra vitam* staining of living cells had not been obtained, whereas necrotic tissue stained deeply, the actual therapeutic experiments with aniline dyes are described; these were entirely negative. The remainder of the first number of the *Journal* is taken up with the proceedings of the American Association for Cancer Research. Interesting papers, followed by lively discussions, were read on primary liver tumours in mice (Slye, Holmes, and Wells), renal tumours in rabbits (E. T. Bell), tumours of the Japanese waltzing mouse and its hybrids (E. E. Tyzzer), and on cancer heredity (Miss M. Slye). Miss Slye's suggestions for genetic prophylaxis of cancer on the ground that cancer behaved as a recessive met with sharp criticism and elicited a spirited rejoinder. Several papers dealt with the Rous fowl sarcoma. There were papers on cancer immunity by Dr. Seelig and Dr. Fleisher and by Dr. Tyzzer, and on the action of radium by Dr. F. C. Wood and Dr. Weil.

THE GENERAL COUNCIL OF MEDICAL EDUCATION AND REGISTRATION.

THE summer session of the Council came to an end on Saturday last, May 27th.

TUESDAY, MAY 23RD.

Registration of Saskatchewan Qualifications.

A report was presented by the Executive Committee in regard to the steps taken for the establishment of medical reciprocity with the Province of Saskatchewan. Inquiries were made in regard to the curriculum in that province, and information as to the adoption of the five-years course in 1915 having been received, the President, in virtue of the powers conferred upon him, directed the Acting Registrar, on April 5th, 1916, to register any person who produced the Licence of the College of Physicians and Surgeons of Saskatchewan, and who satisfied the prescribed conditions.

This report was recorded in the minutes of the Council.

The Apothecaries' Hall of Ireland.

The PRESIDENT, replying to a question put by Dr. MAGENNIS, stated that the Council was empowered by Sections 13 and 18 of the Medical Act, 1858, to incur the expense of sending an inspector to attend and be present on behalf of the Council at the professional examinations of the Apothecaries' Hall of Ireland.

Dr. MAGENNIS said that he saw by the minutes of 1903 that the President said in his address that the Council might perhaps think it no longer to be required that each examination of the Apothecaries' Hall should be inspected. The Hall had been inspected about 50 times in the last 15 years. The examinations of no other licensing body had been inspected during the last two years. Might he ask that the President should make a similar suggestion now to that made in 1903?

The PRESIDENT replied that in 1903 the Council deliberately by resolution placed it in the hands of the President to say when a visitor or inspector should attend the examinations. Two years ago the Council deliberately appointed another method, taking the matter out of the hands of the President. That being so, he would be very slow to suggest that the Council should reverse what it had done.

The Council adjourned.

WEDNESDAY, MAY 24TH.

Penal Cases.

The Council began the consideration of penal cases.

The first to be considered was the case (adjourned from Nov. 4th, 1915) of Herbert Midgley Reeve, M.R.C.S. Eng., L.R.C.P. Lond., M.B. Lond., of Southend-on-Sea, who had been summoned to appear before the Council on the following charge:—"That being a registered medical practitioner you knowingly enabled one Mary Ann Preece, whose name had been removed by the Central Midwives Board from the roll of midwives, to practise as a midwife in contravention of the provisions of the Midwives Act, 1902, as if the said Mary Ann Preece were duly certified under the said Act. And that in relation thereto you have been guilty of infamous conduct in a professional respect." The complainants were the Central Midwives Board.

At the conclusion of the proceedings in November the President announced the decision of the Council as follows:—

Mr. Herbert Midgley Reeve:—The facts alleged in the charge the Council has found to be proved. Your offence was committed notwithstanding the fact that you were in possession of the following warning notice on "covering.":—"Any registered practitioner who by his presence, countenance, advice, assistance, or co-operation, knowingly enables an unqualified or unregistered person, whether described as an assistant or otherwise, to attend, treat or perform any operation upon a patient in respect of any matter requiring professional discretion or skill ..... or otherwise to engage in pro essional practice as if the said person were duly qualified and registered, is liable on proof of the facts to have his name erased from the Register." The Council takes a very grave view of the action of a medical practitioner who thus "covers" the practice of unqualified or uncertified women, under whatever pretext they practise midwifery or otherwise attend and treat women in labour. But in order to give you an opportunity of reconsidering your position in relation to this matter, the Council has postponed judgment in your case till the next Session, in May, of which you will receive due notice. You will then be required to attend, and to produce testimony from your professional brethren as to your character and conduct in the interval.

Mr. H. M. Reeve attended and was accompanied by his solicitor, Mr. W. V. Reeve.

Mr. Julius Bertram, solicitor, represented the Central Midwives Board.

Mr. W. V. REEVE submitted various testimonials on behalf of Mr. H. M. Reeve as to the conduct of the latter in the

interval. These testimonials were from Mr. James B. Maxwell, Dr. John F. Walker, Dr. C. Grant Pugh, medical officer of health of the borough of Southend-on-Sea, and Councillor H. William Cooper, of the Borough Insurance Committee.

Mr. BERTRAM said that he thought he was justified in saying, on behalf of the Central Midwives Board, that they had heard with much gratification the evidence tendered on behalf of the practitioner, and they had nothing further to add.

Mr. W. V. REEVE addressed the Council. He said that it had not been suggested that there was anything in the nature of pre-arrangement between the practitioner and the nurse to contravene the Act. There were mitigating circumstances in the case. Taking into consideration the testimonials of his client's professional brethren, his hitherto untarnished record, and the long period which had elapsed since the occurrence of this case, he appealed to the Council that the judgment which they would pronounce would be such as to enable his client to carry on his practice as heretofore.

Mr. H. MIDGLEY REEVE expressed regret that this case should have occurred and assured the Council that such conduct would not happen again in his practice.

The PRESIDENT announced the decision of the Council as follows:—Mr. Reeve: I have already informed you on behalf of the Council of the grave view it takes of the nature of the offence, specified in the charge, which had been proved against you; but having regard to your assurances as to your conduct in the future, the Council has not seen fit to direct the Registrar to erase your name from the Medical Register.

The Council proceeded to consider the case of Frederick Robinson, L.R.C.P. Edin., of Masbro, Rotherham, who had been summoned to appear before the Council on the following charge: "That being a registered medical practitioner you by your assistance knowingly enabled a Mrs. Fisher, a woman not certified under the Midwives Act, 1902, to attend women in childbirth under cover or pretence that such women were attended or to be attended by you or by her under your direction, thereby enabling the said Mrs. Fisher in contravention of the said Act to practise as if she were certified thereunder. And that in relation thereto you have been guilty of infamous conduct in a professional respect."

The complainants were the Central Midwives Board, who were represented by Mr. Julius Bertram, solicitor.

Mr. Frederick Robinson did not attend, nor was he represented. A telegram was intimated from him stating that he would not be present.

Mr. BERTRAM addressed the Council on behalf of the complainants. He said that under the Midwives Act the only persons who were entitled to attend women in childbirth, habitually and for gain, were duly qualified medical practitioners and certified midwives. He wanted to make it clear that the Central Midwives Board had no desire or intention to interfere in any manner with the question of the discretion of every medical man to conduct his own practice in his own way. They were the complainants in this case only because of the participation by a medical man in what, as they thought, was really the practice of another person who was not entitled to carry on that work. The Council had put their views with regard to "covering" into a resolution warning medical men of the consequences. There were no doubt cases near the border line, but to comply with the Council's requirements the medical man must be in charge of the case and be primarily responsible. He must have had an intention to be free to attend the case. The woman who attended must, in the view of the medical man, be acting under his directions. He thought that the evidence would be sufficient to allow the Council to say that this was a case of "covering." He thought that all the witnesses whom he would call would say that there was no direct engagement. Only in one case did the practitioner pay more than a single visit. There were certain other things which Mr. Robinson did. He notified the birth to the medical officer under the Notification of Births Act. The actual delivery was conducted by the uncertified woman, but the medical man signed the certificate for the benefit under the Insurance Act.

Amongst the witnesses whom Mr. Bertram called were certain women who stated that Mrs. Fisher had attended them in their confinement. Several of them stated that Mr. Robinson had called next morning, but had not examined them.

Miss MARY STEWART, inspector of midwives and health visitor, Rotherham, said that the notifications of births in the confinement of certain of the previous witnesses were signed by Mr. Robinson.

Letters were read from Mr. Robinson denying the charge.

The PRESIDENT said: I have to announce that the Council have judged Frederick Robinson to have been guilty of infamous conduct in a professional respect, and have directed the Acting Registrar to erase from the Medical Register the name of Frederick Robinson.

The Council considered the case of Kenneth Ram Gujral Shaw, M.B., Ch.B. Edin., who had been summoned to appear before the Council on the following charge:—"That being a registered medical practitioner you were convicted of the following misdemeanour—viz., (1) On Sept. 17th, 1915, at the Thames police court, of being drunk and disorderly, in respect of which offence you were bound over in the sum of 60s. to be of good behaviour for six months. (2) On Sept. 21st, 1915, at the County of London Sessions, of exposing your person, in respect of which offence you were on Oct. 12th, 1915, bound over in the sum of £5 to appear for judgment if called upon within 12 months."

Mr. Shaw did not attend, nor was he represented.

Mr. HARPER (the solicitor to the Council) stated that notice of the inquiry had been sent to the practitioner at Messrs. Cook's by means of a registered letter. Messrs. Cook, following instructions, had on April 30th forwarded the letter to Shaw, c/o the Mediterranean Expeditionary Force, Egypt. The Director-General of the Army Medical Service had been written to respecting Shaw, and a reply had been received to the effect that Shaw had not been appointed to a commission in the Royal Army Medical Service, though it was stated that one answering his description had communicated with the War Office regarding such an appointment in 1913. A similar letter of inquiry addressed to the Admiralty had elicited the reply that no one answering the description given had applied for a commission as a surgeon in the Naval Service.

Two certified copies of the convictions were put in.

The PRESIDENT intimated the decision of the Council as follows: I have to announce that Mr. Kenneth Ram Gujral Shaw, having been proved to have been convicted of the misdemeanours alleged against him in the notice of inquiry, the Acting Registrar has been directed to erase his name from the Medical Register.

The Council then proceeded to the consideration of the case of Daniel Evans Powell, M.B., C.M.Glasg., of High-street, Tooting, who had been summoned to appear before the Council on the following charge: "That being a registered medical practitioner you by your assistance knowingly enabled one Jenny Walter, a woman not certified under the Midwives Act, 1902, to attend women in childbirth under cover or pretence that such women were attended or to be attended by you or by her under your direction, thereby enabling the said Jenny Walter in contravention of the said Act to practise as if she were certified thereunder. And that in relation thereto you have been guilty of infamous conduct in a professional respect."

The complainants were the Central Midwives Board, who were represented by Mr. Julius Bertram, solicitor.

Dr. Powell attended, and was accompanied by Mr. J. A. C. Keeves, counsel instructed by Messrs. Webster, Butcher, and Sons, solicitors.

The proceedings had not gone far when they were adjourned until the following day.

The Council adjourned.

THURSDAY, MAY 25TH.

Restoration to Register.

The PRESIDENT announced that the Acting Registrar had been directed to restore to the Medical Register the name of Mr. Casper Denis Downing.

Penal Cases.

The Council again considered penal cases.

The first to be considered was that of Henry William West, M.R.C.S. Eng., L.R.C.P. Lond., Old Basford, Notts, who had been summoned to appear before the Council on the following charge: "That being a registered medical practitioner you were on Nov. 1st, 1915, convicted at the City of Nottingham assizes of feloniously killing and slaying one Harriet Ann Hodgkinson and sentenced to seven years' penal servitude."

Mr. HARPER, the solicitor to the Council, put in the certificate of conviction.

The PRESIDENT said, in announcing the decision of the Council: Mr. Harper, I have to announce to you that Henry William West has been proved to have been convicted of the felony alleged against him in the notice of inquiry, and that the Registrar has been directed to erase his name from the Medical Register.

The Council proceeded with the further hearing of the charge against Daniel Evans Powell, which was adjourned from the previous day.

Mr. BERTRAM, in opening the case, stated that a woman named Jenny Walter owned a maternity home at Tooting, to which a large number of married and unmarried women went for the purposes of their confinement. Proceedings were instituted against her at the instance of the London County Council for the contravention of certain sections of the Midwives Act. In these proceedings she alleged that she was acting in all the cases alleged against her under the directions of a qualified medical practitioner. Dr. Powell gave evidence in a manly way to support the contention of Mrs. Walter that she was acting in all the cases alleged against

her under the directions of a qualified medical practitioner. The evidence then disclosed that there was a verbal working arrangement between this woman and Dr. Powell by which when women were confined in this house they received medical attention, or at any rate inspection by him. It was alleged that at none of the cases referred to was Dr. Powell present at the actual delivery. In all cases he (Mr. Bertram) believed that the notification of birth was given by Dr. Powell. He, Mr. Bertram, had applied for the actual notifications, but the Wandsworth Public Health Committee had passed a resolution that these were not to be produced except under a subpœna.

Several women who were called as witnesses stated that Walter had attended them at their confinements. One of these who had seen Dr. Powell the next day stated that when she went to Nurse Walter the latter had said that the fee was inclusive for her own services and those of the doctor.

Dr. DANIEL EVANS POWELL made a statement in his own defence. Answering his solicitor, he said that in October, 1914, he had been called in to attend an urgent case at Nurse Walter's. As he was going away Walter asked him if he would attend some of the cases. He said that any difficult case he would be glad to attend, but he added that he would prefer them to go into the infirmary. He had attended a number of cases at this house and he was actually present at some of the cases at confinement.

Cross-examined, he said that when he made the arrangement it was his honest intention to be present to do the delivery.

Mr. BERTRAM: Did you ever give her any directions as to how to carry out the confinement?—Not as to the confinement but as to the care of the patient and child and as to nourishment to give.

If she could deliver the patient why should she send for you at all?—Because I had to give medical supervision to the case.

Mr. BODKIN (the Legal Assessor): Was it because she was an unregistered woman?

Dr. POWELL: That was the reason.

Mr. BUTCHER (solicitor for Dr. Powell), in addressing the Council, said that his client frankly expressed sorrow for the manner in which he had acted, which was due to inadvertence. He would never be a party to any indiscretion of the kind again.

The PRESIDENT in announcing the decision of the Council said: Mr. Powell, the Council has carefully considered the charge made against you, which in effect was that you had by your assistance knowingly enabled a woman not certified under the Midwives Act, 1902, to attend women in childbirth under cover or pretence that such women were attended, or to be attended by you, or by her under your direction, thereby enabling her to practise as if she were certified. The facts alleged against you in the charge the Council has found to be proved. The Council takes a very grave view, from the public point of view, of the danger which arises from medical practitioners lending their names for such a purpose and "covering" the practice of unqualified or uncertified women, under whatever pretext they practise midwifery or otherwise attend and treat women in labour. But in order to give you an opportunity of reconsidering your position in relation to this matter, the Council has postponed judgment in your case till the next session in November, of which you will receive due notice. You will then be required to attend and to produce testimony from your professional brethren as to your character and conduct in the interval.

FRIDAY, MAY 26TH.

On consideration of the case of James Andrew Baird Thompson, registered as of South Bermondsey, the following charge was dealt with: "That being a registered medical practitioner you abused your position by committing adultery with a Mrs. Grigson, whom and whose husband and child you had attended professionally, which adultery you were found to have committed by the verdict of a jury given at the trial of the case of Grigson *v.* Grigson and Thompson in the Probate, Divorce, and Admiralty Division (Divorce) of the High Court of Justice on Oct. 20th, 1915, and in which the decree was made absolute on May 8th, 1916. And that in relation thereto you have been guilty of infamous conduct in a professional respect."

Dr. THOMPSON called Mrs. Grigson as a witness, and he also denied that the professional relationship existed.

The PRESIDENT in intimating the decision of the Council said: Dr. Thompson, I have to inform you that the Council has judged you to have been guilty of infamous conduct in a professional respect, and has directed the Registrar to erase your name from the Medical Register.

The Council considered the case of William Joseph Ryan, L.R.C.P. Edin., L.R.C.S. Edin., L.F.P.S. Glasg., who had been summoned to appear before the Council on the following charge: "That being a registered medical practitioner you were convicted of the following misdemeanours—viz., (1) On Feb. 27th, 1914, at the Lambeth police court of being drunk and incapable, and fined 3*s.*; (2) on April 7th, 1915, at the Tower Bridge police court of being drunk and disorderly, and fined 5*s.* or five days; and (3) on Feb. 22nd, 1916, at the Bow-street police court of being drunk and incapable, and fined 10*s.*

Mr. Ryan did not attend nor was he represented.

The PRESIDENT intimated the decision of the Council as follows: I have to announce that William Joseph Ryan having been proved to have been convicted of the misdemeanours alleged against him in the notice of inquiry, the Registrar has been directed to erase his name from the Medical Register.

The Council considered the case against William Bonallo. The Dental Committee reported that the said William Bonallo was registered in the Dentists Register on Dec. 31st, 1878, as "in practice on July 22nd, 1878," and his address in the Register for the current year was Cramlington Hall, Cramlington, Northumberland.

The Committee found that it was established by the evidence: "That on Nov. 2nd, 1915, the said William Bonallo was convicted at the Northumberland assizes of feloniously using a certain instrument with intent to procure miscarriage, and was sentenced to three years' penal servitude."

Mr. Bonallo did not attend nor was he represented.

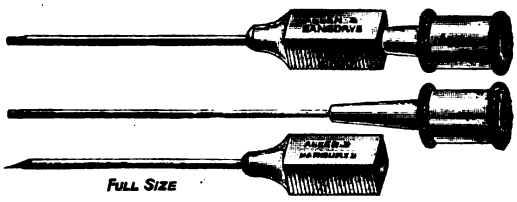
The PRESIDENT intimated the decision of the Council as follows: I have to announce that William Bonallo having been proved to have been guilty of the felony alleged against him in the notice of inquiry, the Council has directed the Registrar to erase his name from the Dentists Register.

The Council adjourned until the following day.

New Inventions.

A NEEDLE AND CANNULA FOR INTRAVENOUS INJECTION.

FOR some months past I have been meeting with patients who, immediately after an intravenous injection of a concentrated solution of galyl or kindred drug, have been affected with bad arms, some with a general inflammation extending from the needle puncture, some with small abscesses, and two with sloughs, one 2½ inches in diameter. The history in each case has been the same—namely, that pain started during the injection. One case, a small slough, occurred after an injection by myself, and was due to a slight leakage of the drug outside the vein during the injection, caused by a movement of the needle. I am certain that all the other cases were caused in a somewhat similar



manner, the leakage being due to a double puncture of the vein by the needle, made either when introducing it, or as the result of movement by the patient or of the syringe. To prevent this double puncture I have devised a neat needle and cannula (see figure) after the pattern of the needle and cannula of Mr. Barker's spinal analgesia syringe, but finer and much shorter. The cannula should be used to draw up the solution into the syringe, and then, after plunging the needle into the vein, the cannula attached to the syringe is pushed along the needle as far as it will go, and the injection given. As the cannula projects beyond the point of the needle the whole can be moved about in the vein without any fear of perforating it. In fact, it is a good plan before injecting to push the needle and cannula farther along the vein, to make sure that it is free and to get beyond any second puncture that may have been made when introducing the needle.

Messrs. Allen and Hanburys, Wigmore-street, London, W., are the manufacturers.

Wolverhampton. W. F. CHOLMELEY, F.R.C.S. Eng.

THE LANCET.

LONDON: SATURDAY, JUNE 3, 1916.

Medical Practitioners and the Military Service Acts.

THE Central Medical War Committee, the Committee of Reference formed by the Royal College of Physicians of London and the Royal College of Surgeons of England to deal with special cases, and the Scottish Medical Service Emergency Committee, are now recognised in the Regulations made under the Military Service Acts as the Professional Committees for all medical men who come within the provisions of the Acts. The effect of this recognition, which was announced last week in THE LANCET, is that every medical man, married or single, under the age of 41 next birthday, and consequently liable for service in the army, will come under the purview of one or other of these three committees on the question whether it is his duty to take a commission in the R.A.M.C. or to continue as a civilian practitioner. Practitioners of military age in England and Wales may be divided into those who are enrolled and those who are not enrolled under the scheme of the Central Medical War Committee, a body whose activities have resulted in the enrolled being the larger class. A medical man under 41, who is enrolled, will not be called up for service with his class by the recruiting authorities, but while pursuing his civil avocations he will be liable to be called upon to take a commission in the R.A.M.C. if and when the Central Medical War Committee decide that it is his duty to do so. If he should receive a notice from the recruiting authorities calling him up, the production of his certificate of enrolment restores him at once to his proper position in accordance with a definite Army Council Instruction. In Scotland the same procedure applies with regard to those who are registered with the Scottish Medical Service Emergency Committee.

But a modification in the position of the enrolled man under 41 has resulted from the passing of the new Military Service Act. Hitherto medical men who have taken service since the beginning of the war as doctors in the army have done so on the system of a contract for one year or until their services are no longer required, whichever happens first. It is now announced authoritatively that every medical man under 41 is, in virtue of the new Acts, under an obligation to serve not only for 12 consecutive months, but for further periods if needed, with such intervals as may be determined, if the military authorities (acting on the advice of the Professional Committees) require him to do so. In view of the obligation on all other classes of the community to serve for the duration of the war, the medical profession is not in a position to object to this new condition. While service with the forces remained voluntary, the Central Medical War Committee was fully aware that a medical man by enrolling undertook no more than an obligation for one year of service, even while contemplating the possibility that the prolonged duration of the war might necessitate a further call. So men who have completed their period of service are invited to re-enrol, thus placing themselves again under the Professional Committees to determine whether and when their services will be again required. In the new conditions every medical man under 41, whether he enrols or not, will be under the enhanced obligation, to be fulfilled by him if and when the military authorities offer him a commission on the advice of the Professional Committee concerned. A given doctor, however, will, we hope, not be selected for a second period of service under the enrolment scheme until other men, equally eligible in other respects, have been taken for service; this would seem to make it unlikely that an enrolled man would need to be called upon without a substantial interval between any two periods of service. Of course, any doctor who prefers his service to be continuous may re-engage at the end of his first year.

In our opinion in each of the cases here under consideration the medical man should enrol under the new conditions—namely, with an obligation not limited to one period of service of 12 months, but extended to such further period or periods as may be found necessary; he must trust the War Office in making its call to give full value to the advice of the Professional Committees. By so doing he will be helping to retain for the medical profession its privilege that the doctor can always fulfil his obligation for military service, not in the ranks, but by becoming a commissioned officer. For if he is enrolled he will not be called up by the recruiting authorities for military service under the compulsory provisions of the Military Service Acts. He will be liable to 12 months' consecutive service, but his obligation to serve (qualified in these ways) will be exacted from him only if and when it is deemed right by a committee established for the purpose by his own profession. All medical men under 41 who do not enrol under the new conditions will be called up by the military authorities in their classes. If they do not desire to be taken for general service, it will be necessary for them to appeal to a local tribunal for exemption. Under the section of the new Military Service Act which deals with medical men, the local tribunal will refer the case to one of the Professional Committees, when the case will be considered, and a recommendation made to the local tribunals which will be binding on them. It will be seen, therefore, that whether a man is enrolled or not, his case will be decided by the same Professional Committees. The enrolled man saves the time of himself and of the tribunal by enrolling, the unenrolled will go through certain formalities only to arrive at the same place. Throughout these remarks the case of conscientious objectors has not been alluded to; with them the Professional Committees do not deal.

Preventive Medicine and American Research.

REPRESENTATIVES from the Medical Departments of the United States Army and Navy are at the present time in this country for the purpose of studying the organisation of our medical services in connexion with the war. We take this opportunity of offering our American brethren, in the name of the medical profession at home, a hearty welcome to our shores. We hope they will find much to interest them in our methods, and we trust that some of the information they collect will prove of use to them when they have recrossed the Atlantic.

It is perhaps not sufficiently remembered by us how deeply the world is indebted to American investigators in the field of preventive medicine. American researches have thrown a bright light upon difficult problems concerning what we call tropical disease. Yellow fever may be instanced in this connexion. It was in 1900 that the United States Government appointed a Commission to proceed to Havana, under the leadership of Major WALTER REED, of the Medical Corps, with whom were associated Assistant Surgeons JAMES CARROL, JESSE W. LAZEAR, and A. AGRAMONTE, to investigate the etiology of this disease. They succeeded in demonstrating among other things that it was spread by the bites of infected stegomyia mosquitoes and in no other way, and REED'S experiments remain as models of scientific research, both for the exactitude with which they were adapted to the points to be proved and for the precautions taken to exclude all sources of error. To their everlasting credit the American soldiers offered themselves fearlessly as subjects for experiment; some of them after being bitten by infected mosquitoes contracted the disease, among them being CARROL and LAZEAR, the latter of whom died a martyr to science. Based upon these experiments preventive measures, including mosquito destruction, were formulated at Havana, which for 150 years or more had been a veritable hot-bed of yellow fever, but from which since 1901 the disease has completely disappeared, save for a few occasional imported instances. The same methods have been employed more recently in other endemic areas of the disease such as Rio de Janeiro, Para, Manaos, and elsewhere, from which yellow fever has now also vanished. Another great victory was achieved, and an object lesson given to all tropical countries, in the Panama Canal Zone, where yellow fever, malaria, and other insect-borne diseases had in the past ravaged the population year by year. The Americans began to construct the Isthmian Canal in 1904, and Colonel (now Surgeon-General) GORGAS, who had formerly served as chief sanitary officer at Havana when Reed's Commission had made their experiments, was appointed chief of the new sanitary department. In view of the previous disastrous experiences in this region it is safe to say that without the labours of this sanitary department the Panama Canal would never have been completed. Through the well-directed measures of Colonel GORGAS and his staff yellow fever, malaria, blackwater fever, dysentery, and other diseases were brought entirely under control, and the general death-rate among the labourers, which was 52·45 per 1000 in 1904 fell to 20·49 in 1912. Briefly, what was once an intensely unhealthy area became salubrious, and the doctrines of MANSON and ROSS were triumphantly established. The work at Panama, like that at Havana, is always alluded to by writers on germane subjects, but its detailed history would repay more attention than it has received, while there are other valuable American contributions to preventive medicine which are frequently passed over. The investigation of that mysterious disease pellagra has been very carefully prosecuted in the United States in recent years, by the McFadden Thompson Commission of New York and other workers, and already with encouraging results. A great decrease has recently taken place in America and other parts of the world, including Egypt, in the incidence of ankylostomiasis or hookworm disease, due partly to the efforts of ASHFORD and others with the assistance of the American International Commission, an offshoot of the Rockefeller Foundation. The etiology of exanthematic typhus was independently worked out by two groups of American investigators, ANDERSON and GOLDBERGEN, and RICKETTS and WILDER; it was only an unlucky chance which prevented the earlier publication of their results before those of M. NICOLLE and his collaborators in Tunis had been made public their incrimination of the body louse as the insect transmitter of this disease. The credit therefore of the discovery must be shared by the Americans. Much new light has been thrown upon cerebro-spinal fever and epidemic poliomyelitis by American workers, and American military and other medical officers stationed in the Philippines have contributed greatly to the general fund of knowledge of tropical diseases, particularly as regards beri-beri. Nor do these examples exhaust the list, but they will suffice to show some at least of our indebtedness in preventive medicine to scientific workers in America.

Our American visitors will doubtless find a good deal that is new to them in our arrangements for the care of the sick and wounded, for the prevention of disease among our troops at home and in the field, and for maintaining in other ways the health and efficiency of the British army. It may be mentioned in this connexion that although antityphoid inoculation originated in England, the adoption of the procedure in America helped largely to confirm its value and assisted in gaining its acceptance by our own military authorities. We understand that only one officer of the British army has died from typhoid fever since the commencement of the war, and we believe that at the present moment there are not more than two dozen typhoid cases among our troops. This remarkable freedom of an immense army in the field from what has been generally deemed a necessary curse is greatly due to the systematic adoption by the authorities in the United States of WRIGHT'S work.

Annotations.

"Ne quid nimis."

THE NUMBER OF MEDICAL STUDENTS.

THE following is an official return, received from the General Medical Council, of medical students in actual attendance, during May, 1916, on courses of professional instruction at medical schools and approved teaching institutions:—

—	Men.	Women.	Total.	Men under 18.	Men from outside the United Kingdom.
First year ...	1422	636	2058	489	102
Second year ...	783	295	1078	26	129
Third year ...	519	163	682 (1905)	0	146
Fourth year ...	1078	145	1223 (1905)	0	186
Final year ...	922	140	1062	0	115

A note to the return, which is signed by Sir Donald MacAlister, President of the General Medical Council, adds that a number of third-year students who passed a professional examination at the end of the winter session have been transferred to the fourth-year class by direction of the military authorities.

THE TRAFFIC IN NARCOTIC DRUGS.

THE Order of the Army Council which we recorded last week restricting the sale of narcotic drugs to soldiers is of special importance, since it introduces into medical and pharmaceutical practice an entirely new principle so far as this country is concerned, placing on the liberty of the subject a restriction of a nature that is novel to our poison legislation. In practically every other civilised country but our own the distribution of narcotic drugs is limited by law to cases of legitimate medical necessity, and the conditions which the new Order now makes applicable to our army have long been enforced on the whole of their populations. It would be a good thing if public opinion could be directed in this country towards the creation of a popular demand that a measure now applied to one section of the community should, through an emergency Act of Parliament, be made applicable to all sections. If, while the public is in the mood for the enforcement of salutary restrictions on liberty, the provisions of this new Order were extended to the whole population, there are strong reasons to believe that we should never revert to our present slipshod methods of dealing with the distribution of poisons. If we wait until the war is over we shall find ourselves confronted with all those pettifogging controversies and the clamouring of vested interests which always put a brake on progress. Under present conditions such drugs as barbitone, sulphonal, and trional are almost as easy to purchase as chocolates, and so long as the druggist labels them in accordance with the law he can spend the whole of the day handing bottles of these hypnotic drugs to any customer who cares to ask for them. Even cocaine and morphine can be purchased by almost anyone; for who is there who cannot obtain an introduction to some pharmaceutical chemist and so put himself and the purveyor on the right side of the present futile law? This question implies no misconduct on the part of pharmaceutical chemists, and, indeed, it would be surprising and disappointing to find that they as a class would not welcome such an alteration in the law as would place them beyond the unwelcome importunities of their customers. The provision of the Order which requires medical practitioners who prescribe any of the scheduled drugs for soldiers to sign the prescription with their full name and address and to write on it the words "Not to be repeated" has long been advocated to apply to all prescriptions for such drugs as cocaine and morphine. It is commonly acknowledged that the drug habit is sometimes acquired through the repeated use of prescriptions which the prescriber intended to be used only a limited number of times. Compliance with this provision of the Order will initiate a salutary habit which many practitioners will no doubt continue when the Order which enforced it has become a thing of the past, even though the principle may not be embodied in permanent legislation.

OBLITERATIVE ARTERITIS AND LEAD POISONING.

THE etiology of obliterative arteritis is somewhat obscure. In the *Boston Medical and Surgical Journal* of April 13th Dr. W. Timme has reported a case the interest of which lies in the fact that lead poisoning appears to have been the cause. A painter, aged 36 years, was admitted into hospital on Dec. 21st, 1915. During the last year he had a typical blue line on the gums, which responded to local treatment by a dentist. He had no palsies, but he complained of pain along the sciatic nerves and in some joints. In 1913 pain in the left leg began after walking and ceased on resting, to begin again on walking. This intermittent claudication became gradually worse, so that only short distances could be walked without resting. In February, 1915, he could no longer walk. The left leg became heavy and helpless and cold and the seat of extreme pain and tenderness. The calf became smaller and flabby. He was treated with electricity and potassium iodide, but grew steadily worse. Hot packs, massage, rest, and exposure to the sun were then tried and he improved. A few ulcers developed on the outer side of the foot and spread rapidly. They were treated with the therapeutic lamp and they healed. In October the ulcers re-formed and necrotic areas developed at their site. Three weeks before admission to hospital the little toe was removed, but the sloughing continued. On examination the patient was found to be a frail, anæmic, ill-nourished man. The tongue was coated and there was a suggestion of a blue line on the gums. The muscles of the left thigh and leg were markedly atrophied. No pulsation could be felt in the dorsalis pedis or any other artery of the left lower limb up to and including Poupart's ligament. The urine contained traces of lead. The fundi were normal. The Wassermann reaction was negative. Nothing is said about the treatment of the case, Dr. Timme remarking: "No adequate therapy has yet been devised." In this country Dr. F. Parkes Weber has pointed out the comparative frequency of arteritis obliterans among male Jews in the East End of London who are in the habit of smoking a large number of cigarettes. He suggests that unwholesome food and racial factors play a part in the etiology. Other causes suggested are syphilis and arteriosclerosis. Kolisko has stated that he has seen

obliterative arteritis frequently in chronic lead poisoning. This view is borne out by an American writer, Victor C. Vaughan, who, in an article on mineral poisons, declares that the changes in the vessels in lead intoxication are those of arteritis obliterans. Arteriosclerosis, of course, is a well-recognised result of this poison.

THE DEFINITION OF PORT WINE.

THE decision of the Government to restrict the word "port" to that wine certified by the Portuguese Government to be the genuine product of the Douro region, and exported from Oporto, is a curious issue of the war. It has followed upon a statement made by the Portuguese Government that unless this definition was accepted they would not ratify the Commercial Treaty signed at Lisbon in August, 1914, under which both countries secured commercial advantages. It does not appear to be generally remembered that already some restriction as to the use of the word "port" is in force, although the definition did not go quite so far as the recent proposal. As was pointed out in a report on port wine published in THE LANCET in 1907, a general order of the British Customs requires the use of the word "port" to be confined to Portuguese wines, the designation to be accompanied by a declaration of the country of origin. The new restriction goes farther than this, as it excludes Portuguese wines produced outside the Douro district. Wines resembling to an extent the composition and character of genuine port wines are, of course, produced in other countries. But the designation must be qualified by the name of the country of their origin. Such are Spanish "port" or Tarragona, Cape "port," Canary "port," Cyprus "port," Palestine "port," Australian "port," Californian "port," Algerian "port," and so forth. Apart from considerations of commerce, the new measure is a good one. By a proper extension of accurate definition it encourages the principle of honest trading.

DISEASES OF ANIMALS ACTS.

THE report for the year 1915 of the proceedings under the Diseases of Animals Acts and the Markets and Fairs (Weighing of Cattle) Acts[1] is somewhat shorter than in previous years, this being partly because the Tuberculosis Order of 1914 remains in abeyance. Of foot-and-mouth disease there were 56 outbreaks as compared with 27 in 1914, and with the exception of one isolated case, all the disease was confined to the counties of Somerset and Wilts. Anthrax shows a decline of 147 cases and glanders of 48 from the figures of the previous year, but this latter figure does not include army horses, among which it is understood there have been several cases. To trace the origin of the outbreaks of foot-and-mouth disease has been as difficult as ever. A possible source lies in the returning soldiers from France where the disease was prevalent near the British lines. The infection of pigs at Butleigh was ascribed to contaminated whey with which they had been fed. The movement of dogs and poultry was restricted in this outbreak. In checking the spread of the disease acknowledgment is made of help given by the North Somersetshire Yeomanry. Adequate civilian labour was impossible to secure, while the staff of inspectors and veterinary inspectors had already been depleted. The value of quarantining imported dogs is emphasised by the discovery in March of rabies in a dog undergoing detention. Swine fever has been treated by the use of serum, and on the whole this treatment has been very favourably received by pig-owners. Treatment was accepted and carried out in 390 outbreaks. The trade in foreign animals practically ceased in 1914, but special provision for a speedy revival of foreign trade has been made in case a scarcity in the meat-supply should cause any serious rise in prices. Accommodation for Canadian animals has been arranged at Birkenhead, and for animals from other foreign sources at Avonmouth and Cardiff.

[1] Annual Report of Proceedings under the Diseases of Animals Acts and the Markets and Fairs (Weighing of Cattle) Acts for the Year 1915. Darling and Son, Limited, Bacon-street, London, E. Price 3d.

THE "TABARD-STREET AREA."

IT is a matter for congratulation that the "Tabard-street area," notorious for its insanitary conditions, is doomed. From a report of the Housing of the Working Classes Committee to the London County Council, dated May 10th, we learn that compensation has now been finally assessed in all the disputed claims in respect of property required for the Tabard-street, Grotto-place, and Crosby-row scheme, and that terms of purchase have been arranged in all the remaining cases. The total expenditure on the purchase of the property will probably fall short of the original estimate made in 1910 by as much as £200,000, the reduced estimate now standing at £273,300. The reduction is partly due to depreciation of property in the area and partly to successful arbitration in connexion with claims for trade interests. We trust that the picturesque names will remain and the new Grotto-place be cool and salubrious in the hottest weather.

THE EXTINGUISHING OF FIRES CAUSED BY BOMBS.

A USEFUL report has been issued by a Committee appointed by the Home Secretary in March last, who were asked to conduct experiments to test the value of dry powder fire-extinguishers as compared with water and other "first-aid" appliances for extinguishing or effectively controlling fires such as are likely to be caused by bombs. The tests were carried out on April 3rd at the London Fire Brigade headquarters and in some condemned house property adjacent thereto. Every assistance was given to the Committee by the London County Council and the Fire Brigade. In each case the appliances were used by an unskilled person. In the opinion of the Committee the conclusion to be derived from these experiments is that, while none of the agents employed could be said to have any material effect on the combustion of the bomb itself, there was a very marked general difference between those experiments in which water was used and those in which dry powder was applied. The spread of the fire caused by the bomb was greatly limited and in some cases totally prevented by the application of water; whereas, after the application of the dry powder the fire continued to burn, although at each application some temporary check to the flames was observed. The Committee conclude that by far the best extinguishing agent is water and that the use of dry powder extinguishers gives a misleading sense of security, while being practically useless for extinguishing or effectively controlling fires likely to be caused by bombs. The main constituent of

the dry powder extinguishers was found to be bicarbonate of soda. It may be remembered that we reported in THE LANCET that the British Fire Prevention Committee recommended the use of a mixture of bicarbonate of soda and sawdust for the extinction of small petrol fires. In this case, however, the use of sawdust appeared to be effective because it floats on the top of the petrol so to an extent excluding the air and smothering the fire. The bicarbonate of soda, it was added in the report, had certain advantages, but its use was not regarded as essential.

INJECTION OF THE GASSERIAN GANGLION FOR TIC DOULOUREUX.

IN the *Medical Clinics of Chicago* for January Dr. Ralph C. Hamill, of the Cook County Hospital, has published the record of a case of trigeminal neuralgia successfully treated by the injection of the Gasserian ganglion with alcohol. The patient was an Italian labourer, aged 37, whose illness had been of some ten years' duration. Paroxysms of pain occurred at very frequent intervals, running from the inner canthus of the left eye down into the left upper bicuspids. This pain was described as consisting of lightning-like jabs of tearing, wrenching, stabbing pain, coming on with full intensity, and lasting from a few moments to three minutes. Swallowing, talking, chewing, shaving, &c., would all precipitate a paroxysm. On objective examination no signs of organic disease could be detected, and there was no evidence of arteriosclerosis. Tic douloureux is a well-known clinical condition for which no adequate pathology has ever been demonstrated, and its etiology is obscure. Where some definite local condition causes the pain there is usually a more or less constant dull ache apart from the paroxysms, whereas in so-called idiopathic trigeminal neuralgia between the paroxysms the patient is often entirely free from pain. The administration of various sedatives having proved unsatisfactory, Dr. Hamill injected the Gasserian ganglion with 20 minims of the following solution: alcohol 3½ drachms, cocaine 1 grain, water to half an ounce. The point selected for the injection was 2 cm. below the zygoma and 2½ cm. anterior to the external auditory meatus. When the puncture is made at this point it is necessary to have the patient open his mouth as widely as possible, in order that the needle may clear the coronoid process of the inferior maxilla. The needle is pointed upwards at an angle of about 60° to the plane of the face and slightly backward. At about 4 cm. in from the surface bone is encountered, the pterygoid plate; by slightly withdrawing the point of the needle, changing its direction rather more backward, and elevating it somewhat, the operator gradually feels his way with the needle-point past the edge of the pterygoid plate to the base of the skull, just lateral to the foramen ovale. If the point is then inclined slightly downwards and advanced, sudden pain should be felt in the distribution of the inferior division of the trigeminal—viz., in the lower jaw, cheek, lip, or tongue. If the needle is now advanced another ½ cm. pain will be felt in the other branches of the fifth. The syringe is then connected to the needle and a few minims of the alcohol mixture is injected. Immediately the patient complains of a sensation "as if thousands of little darts or needles had shot through the corresponding side of the face." Assured by this sign, the physician can then inject a further ½ to ¾ c.c., whereupon analgesia appears throughout the distribution of the nerve. It is advisable to shield the corresponding eye during the first 24 hours following the injection, or even to suture the lids together. Dr. Wilfred Harris, however, has shown that corneal ulceration may be avoided by stopping short of total anæsthesia; the good effects are just as lasting from the point of view of relief from the pain.

THE METROPOLITAN WATER-SUPPLY.

THE report on the condition of the metropolitan water-supply during the month of January by the Water Examiner appointed under the Metropolis Water Act was issued last week. It is the briefest document so far issued by this authority; its size perhaps reflects the shortage of paper, which is now seriously inconveniencing public bodies. The usual information on the chemical and bacteriological examinations, for which Dr. A. C. Houston, the Director of Water Examination, is responsible, is summarised by Mr. C. Perrin, and does not, as hitherto, appear separately. The tables containing the chemical and bacteriological results are, however, appended. All the samples of water collected at the different works were clear, bright, and free from suspended matter. The results of chemical examination showed that the raw waters of the New River, the Lee, and the Thames improved in quality as judged by the albuminoid nitrogen, permanganate, turbidity, and colour tests. The filtered waters, however, deteriorated as judged by the albuminoid nitrogen (New River excepted) and colour tests (with the exception of New River, East London, Sunbury, and Chelsea). Compared with the 1915 averages, the raw waters yielded results worse than their respective averages as judged by the usual tests. The filtered waters yielded similarly worse results. All three raw waters contained more bacteria than their respective averages, while the filtered waters gave, generally speaking, not unsatisfactory results. Whereas 95·0, 100·0, and 65·0 per cent. of the samples of raw Thames, Lee, and New River water respectively contained typical B. coli in one cubic centimetre (or less) of water, 83·4, 90·0, and 69·0 per cent. of the filtered samples derived from the Thames, Lee, and New River respectively contained no typical B. coli even in 100 times as much water examined—viz., 100 cubic centimetres. The rainfall was below the average mean for the month taken for the previous 33 years.

ITALY'S chief balneary resort, Montecatini, sustained (writes our Rome correspondent) a severe loss last winter in the deaths, within a few weeks of each other, of its consulting head, Dr. Guido Baccelli, and of its medical administrator, Dr. Pietro Grocco. Their vacant posts have just been satisfactorily filled by the appointment in succession to Baccelli of Dr. Augusto Murri, the veteran professor of clinical medicine in the University of Bologna, known also, since Baccelli's death, as "Dean of the Medical Faculty" throughout Italy; and by the appointment, as Grocco's successor, of Dr. Giovanni Battista Queirolo, who has long held the clinical chair in the Pisan School with conspicuous acceptance. One of the many sequelæ expected to supervene on the close of the present war will be, so far as Italy is concerned, a greatly increased development of her resources in balneary health resorts, with a view to

retaining within her borders, and even to attracting from beyond them, much of the *clientèle* hitherto claimed (not always justly) by the German and Austro-Hungarian thermal "cures." Montecatini will be among the first of Italy's balneary centres to receive the State encouragement in contemplation, and will enjoy, in the person of the Senator Dr. Queirolo, a Parliamentary representation and support which must redound to its interests in every sense—medical, material, and administrative.

THE Highlands and Islands Medical Service Board has issued under the title of a "Second Report" the various explanatory documents emanating from it up to the end of 1915. Several of these have been commented upon in THE LANCET at the time of their appearance, and their republication in the form of a Blue-book makes the information contained in them accessible in a handy form. The lists of medical men and of their districts were originally sent out in the less convenient guise of posters. Draft forms, including one of an agreement between the Board and a medical practitioner proposing to accept service under the Board, will be found among the appendices. The pamphlet can be obtained from H.M. Stationery Office (Scottish Branch), Edinburgh, and the usual official publishing firms, or through any bookseller. Its price is 3*d*. and its reference number Cd. 8246.

THE annual meeting of the British Dental Association is to be held in the hall of the Royal Society of Medicine on June 15th, 16th, and 17th. War injuries and gunshot fractures of the jaw will principally be dealt with, and an exhibition of appliances has been arranged. The discussion opens at 2.30 P.M. on the 15th and at 10.30 A.M. on the other days.

A COURSE of three lectures on Inherited Disease in Children will be given by Dr. Mary Scharlieb at 8 P.M. on Wednesdays, June 21st and 28th, and July 5th, in the Robert Barnes Hall, 1, Wimpole-street, W., by permission of the Royal Society of Medicine. The lectures, which are given free to women, will be illustrated by the epidiascope.

MEDICAL SICKNESS AND ACCIDENT SOCIETY.—The usual monthly meeting was held at the society's offices, High Holborn, W.C., on May 19th, Dr. F. J. Allan being in the chair. The accounts presented showed a falling off in sickness in comparison with the same period last year, and the experience is below the expectation for the four months—an unusual feature for the spring months. It was reported that further sums had been invested in Exchequer Bonds, making a total of £18,000 now invested in War Stocks since August, 1914. Applications were reported from members for annuities under the new table which is now registered by the department and is accordingly open both to members and non-members, and it is hoped will prove satisfactory and useful to the profession generally. The society now transacts all the three benefits it was originally founded for and at rates that it would be hard to beat, and, as far as the sickness is concerned, impossible. The committee have decided that in future the society will pay the usual fee of £1 1*s*. for the medical examination of both new and additional proposals, the member to have the same right as hitherto of going to whom he pleases for such examination unless otherwise instructed by the society. Membership is still open to those taking temporary commissions in the Royal Army Medical Corps or the Navy within certain limits with regard to amounts, as so far the committee do not consider that the casualties justify them in any way altering their previous decision in this matter. No extra premiums are charged to members of the two forces mentioned. All applications for prospectuses and further information should be addressed to the Secretary, Medical Sickness and Accident Society, 300, High Holborn, W.C.

THE COCKROACH: ITS DESTRUCTION AND DISPERSAL.

A COMPARISON OF INSECTICIDES AND METHODS.

BY JOSEPH J. H. HOLT, M.B., CH.B. VICT., D.P.H.

THE common cockroach (*Periplaneta orientalis*) is one of the most widely distributed, as well as one of the most repulsive pests of civilisation. Its ubiquity and persistence demonstrate alike its fecundity and power of adaptation. There is little record of investigations dealing with the nuisance. Mr. Frederick Laing, Assistant in Entomology, British Museum, informs me that most of the work on the subject has been done in America, and some time ago. Much of the literature is old, because what has been done recently has been little more than a revision or repetition. He kindly sent me a list of these publications with details of some of the remedies suggested. These I found of little practical value.

For some two or three years I have been testing the action of various substances. Preliminary investigations in reference to general conditions gave some unexpected results. The cockroach is able to exist a long time without food or water. One survived for 76 days in a Petri dish. It can live with a very limited air-supply: in a very small stoppered bottle one lived for 3 days. Another survived submersion in water for 20 minutes. The cockroach is an expert climber; a full-grown specimen can crawl up the vertical side of a glass bottle. Hence walls and ceilings offer no impediment to it. It is not particular as to food-supply, eating practically all kinds of organic matter, and also its own dead. It is, however, very clean in its habits, and carefully cleanses its own body. The cockroach is soon adversely affected by contact with its own excreta. It prefers warm quarters, migrating till it finds them. Hence its predilection for kitchens on account of the constant warmth and available food-supply. It dislikes light, but even constant exposure to it for long periods does not seem to harm it. It is therefore evident that architectural prevision cannot keep out the cockroach, nor domestic cleanliness starve it out. When once established, it must either be destroyed or driven away.

In the following experiments the liquid volatile bodies were used in a large, wide-mouthed, glass-stoppered bottle of about 1250 c.c. capacity. In most cases the quantity was 1 drachm, and this, if volatilisation was complete, would give a concentration of 3·2 per 1000. As, however, few of the bodies were completely volatile, the actual strength was considerably below this. The liquid was sprinkled on lint, which was then suspended in the bottle, but did not touch the insects. Three to six insects were used, the time of death in each case recorded, and the average noted. This average is the one given in the tables. Most of the experiments were repeated two or three times, some much oftener. The dusting powders and food poisons were tested in shallow trays, covered over with glass to prevent the cockroach from escaping. Mechanical beetle-traps are of little use. They were found to catch a very small proportion only, and after they become rusty inside the cockroaches can easily crawl out.

The cockroach appears to be more resistant in autumn, but no correction has been made in the tables for temperature or season.

Results of Experiments on the Lethal Effect of Various Bodies on the Cockroach.

Volatile Bodies.

	Lethal in—
Bromine vapour, 0·016 : 1000*	½ min.
Sulphur dioxide	2 ,,
Chloroform, 1·6 : 1000	1 ,,
,, 0·8 : 1000	2 ,,
,, 0·4 : 1000	5 ,,
Ether, 6·4 : 1000	5 ,,
,, 3·2 : 1000	5 ,,
Carbon disulphide, 3·2 : 1000	8 ,,
Carbon disulphide, 0·8 : 1000	8 ,,
Bromoform, 3·2 : 1000	9 ,,
,, 0·8 : 1000	9 ,,
Hydrocyanic acid, 2% solution, 3·2 : 1000	10 ,,
Ammonium sulphide solution	15 min.
Acetone	32 ,,
Methyl alcohol	45 ,,
Ethyl ,, (spir. rect. B.P.)	70 ,,
Pyridine	70 ,,
Amyl alcohol	80 ,,
Wood naphtha	90 ,,
Acetic acid, concentrated	90 ,,
Paraldehyde	3 hrs.
Formaldehyde	3½ ,,
Nicotine (commercial alkaloid)	3 ,,
Liquor ammoniæ, concentrated	4 ,,
Chlorine vapour	4 ,,

* In each instance the concentration is that if full volatilisation had taken place.

Aromatic Oils.

Ol. Sinapis, essent.... ...	75 min.	Ol. Anisi	25 hrs.
,, Origani (oil of thyme)	3 hrs.	,, Pini sylvestris	25 ,,
,, Aurant.	6½ ,,	,, Camphoræ	36 ,,
,, Rosmarini	8 ,,	,, Pimentæ	38 ,,
,, Eucalypti	9 ,,	,, Cedri	39 ,,
,, Succini...	9 ,,	,, Fœniculi	44 ,,
,, Citronellæ	11 ,,	,, Sassafras	49 ,,
,, Cajaput.	12 ,,	,, Caryophylli	54 ,,
,, Carui	12 ,,	,, Valerian.	59 ,,
,, Myristicæ	14 ,,	,, Copaibæ	60 ,,
,, Lavandulæ	14 ,,	,, Cadinum	60 ,,
,, Limonis	15 ,,	,, Santal. flav.	85 ,,
,, Cinnamomi...	18 ,,	,, Sinapis express ..	+100 ,,
,, Menth. pip.	20 ,,	,, Staphisagræ ...	+100 ,,
,, Geranii	21 ,,	,, Terebinth.	+100 ,,
Capsici rub.	23 ,,		

Coal-Tar Derivatives.

Toluol (b.p.* 110° F.) ...	45 min.	Creosote, commercial ...	3½ hrs.
Benzol (,, 80°)	45 ,,	Phenol (b.p. 180°)...	10 ,,
Xylol (,, 140°)	82 ,,	Naphthalene (,, 216°)...	63 ,,
Coal gas	2 hrs.	Anthracene (,, 360°)	+150 ,,

Paraffin Derivatives.

Benzoline (b.p. 60°) ...	17 min.	Petroleum ether (b.p. 36°)	2 hrs.
Heptane (,, 98°) ...	40 ,,	Paraffin (burning oil)	
Petrol (,, 36°–69°)...	60 ,,	(b.p. 150°–289°)	33 ,,

* b.p. = boiling point.

So far all the substances kill through the respiratory system.

Dusting Powders.

Chloral hydras, pul. ...	4 hrs.	Mustard, common	36 hrs.
Hydrarg. perchlor., dry	4 ,,	,, + boric acid (aa	22 ,,
Potass. sulphurata 4% and tart. ac.	4½ ,,	,, + sod. carb. exsicc.	28 ,,
Iodoform, crystals	9 ,,	Snuff (tobacco)	47 ,,
odine ,, ...	13 ,,	Dalmatian insect powder	48 ,,
Sod. fluoride, pul.	11 ,,	Dalmatian insect powder ether extract	38 ,,
,, ,, + boric acid	21 ,,	Dalmatian insect powder after ether extract ...	75 ,,
,, ,, + sod. carb. exsicc.	24 ,,	Keating's insect powder...	50 ,,
Insecto	33 ,,	Veratr. alb. pulv.	86 ,,
Bleaching powder	19 ,,	Lycopodium powder ...	110 ,,
,, ,, + boric acid	11½ ,,	Alum pulv....	+100 ,,
Pepper, common	24 ,,	Borax ,, ...	+100 ,,
,, ,, + sod. bicarb.	18½ ,,	Hellebor. nigr. pul....	+100 ,,
Pepper, common, + sod. carb. exsicc.	35 ,,	Lead oxide...	+100 ,,
Pepper, common, + boric acid	68 ,,	Plaster-of-Paris... ...	+100 ,,
Pepper, black	22 ,,	Potass. carb.	+100 ,,
,, white	50 ,,	Red pepper, pul. ...	+100 ,,
Boric acid	25 ,,	Sod. chloride	+100 ,,
Bismuth carb.	27 ,,	Santonin	+100 ,,
		Sulphur sublim. ...	+100 ,,
		Quinine sulph.	+100 ,,

Most of these kill through the respiratory system.

Food Poisons.

	Lethal in—		
Arsen. oxide + flour + sugar (aa)	41 hrs.	.....	—
,, ,, 2% + treacle	+96 ,,	.....	—
Phosphorus (fumes from metal)	6½ ,,	.....	In small covered dish.
Sevum phosphoratum 5 %	6½ ,,	.....	,, ,,
,, ,, 10 %	178 ,,	.....	In large bottle. Open top.
Phos. 5 + flour 95 + aq. 600, in paste...	36 ,,	.....	In small covered dish.
Phos. 5 + flour 95 + aq. 400, in paste...	40 ,,	.....	,, ,,
Roachaline‡	43 ,,	.....	,, ,,
Blattes‡	37 ,,	.....	,, ,,
,, ...	107 ,,	.....	,, ventilated ,,
,, 10 gr. renewed daily ...	8 days.	.....	In large bottle. Closed top.
,, ,, ,, ,, ...	21 ,,	.....	In large bottle. Open top.
Plaster-of-Paris + flour + sugar	+100 hrs.	.....	Water-supply in separate dish.
Oxalic acid + potato + sugar	+100 ,,	.....	—
"Lyons" powder + potato ...	+100 ,,	.....	—

‡ Advertised remedies. In appearance and action much like the pastes immediately preceding. Sevum phosphoratum (Martindale), 10 %, is apparently a stable preparation.

Commenting on the last table, the tolerance of the cockroach to arsenic is remarkable, and in any case its dangerous character unfits it for general use.

The action of the phosphorised poisons was tested more fully, as there seems to be reliable evidence that it has been found effective. But the statement which has been made that "after eating the paste the cockroach retires to its hole and dies" requires modification. If phosphorus kills at all it does so through the respiratory system. Strong fumes kill fairly quickly, but death is delayed the greater the dilution, until, with a good air-supply, practically no toxic effect is produced. One specimen lived 32 days in an open bottle in close contact with a fresh sample of phosphorus paste renewed daily. Hence if the cockroach always disappears when the poison is used as directed, some other explanation is required. And it would seem to be that it is the fumes which drive the cockroach away. It must therefore be exceedingly sensitive to such respiratory irritants, and this fact is of importance on other grounds. The experiments show that a number of bodies kill the cockroach through the respiration very quickly. This is its most vulnerable point. Assuming that the bodies which kill most quickly are also the most irritant, it is reasonable to suppose that they will also drive the cockroach away most quickly. The problem therefore seems to resolve itself into selecting from the respiratory poisons those which are most irritant to the insect, and at the same time least harmful to man. Of these substances bromine is the most active, but it disperses very quickly, and would therefore require the rooms to be sealed. Bromine is expensive. At pre-war rates it would probably cost about £2 to act on 1000 cubic feet. Sulphur dioxide (from burning sulphur) is also very effective and is cheap. In this case, too, the rooms must be sealed. These are probably the best methods for use on ships, where destruction must be aimed at, as the cockroach cannot be simply driven away. For domestic use the best available and most practical respiratory irritants are wood naphtha, one of the aromatic oils, or creosote. It is important to remember that a prolonged application, renewed daily (or nightly), is necessary. If only used once or twice the cockroach might regard the vapour as a passing nuisance and return when its influence was spent. Two or three weeks are required to produce any lasting effect. The paraffin derivatives, though very effective, are too dangerous for common use on account of their inflammability.

Many of the aromatic oils are available. The oil of citronella, used by sailors to keep mosquitoes out of their cabins, and by travellers as a preventive, is useful. Tested by the cockroach, the oils of thyme, orange, rosemary, and eucalyptus are more active, and would probably also be more effective with the mosquito. As these oils act by their odour, it would probably be better to sprinkle them upon the clothing, as more could thus be used and the effect last longer. These oils form the basis of many scents, which are therefore more or less anti-parasitic. It is interesting to recall that camphor and lavender have been used for generations to keep moths away from clothing. The experiments indicate, also, that the direct paraffin derivatives are more toxic than those of the coal-tar series. In both series the toxicity increases to a maximum as the boiling point rises, until a point is reached, after which it declines as the boiling point rises still further. Many of the dusting powders owe their efficacy to the volatile oil which they contain. Several are more effective than the Dalmatian insect powder, the reputed basis of Keating's powder. Potassa sulphurata, which gives off H_2S, soon becomes inert. The best powder tried was sodium fluoride. This is very effective and keeps well. A mixture of equal parts of bleaching powder and boric acid also acts well and keeps well. Although boric acid is useful, borax is useless. The powder of veratrum album pulv. is slightly active, veratrum nigrum useless. In this series of experiments the insects were kept in direct contact with the powder, and if there was no effect in 100 hours the powder was considered useless.

Summarising the results of the experiments as a whole, they seem to indicate that many of the substances which have been supposed to kill the cockroach have really acted by driving it away and so leading to its disappearance. Such gregarious migrations have been observed but have hitherto been otherwise explained. For quick destruction stoving with bromine or sulphur dioxide is apparently best. For domestic application the daily use of creosote, wood naphtha, or the oil of rosemary, eucalyptus, or citronella placed near the haunts of the cockroaches for two or three weeks should effectually disperse them. Where these are inadmissible on account of their smell, odourless dusting powders may be used. Of these sodium fluoride was found to be the most effective. It is also cheap and keeps indefinitely.

These experiments may have some value as applied to insect pests. The cockroach being abundant and of large size, it has been possible to use it as an "indicator" and to observe the results more accurately than would be possible with small insects. Other things being equal, the same results should follow in the case of many other insect pests.

Middleton, Lancs.

THE PROVISION OF MEALS FOR SOLDIERS' FAMILIES IN FRANCE.

(BY OUR SPECIAL SANITARY COMMISSIONER.)

Paris, May, 1916.

HOW to ensure a food-supply sufficient to maintain the nation when the entire male population of military age is mobilised constitutes a problem of which we in England are only beginning to perceive the difficulties, and these, moreover, have become apparent to us gradually. When the war began we in no wise attempted to mobilise the nation. Very few persons conceived that it would ever be necessary to do anything of the sort. If a small paid army of volunteers did not suffice we would pay more and secure a somewhat larger army. It was thus that many besides the wiseacres talked, while those who were able to speak with more appreciation of the situation were condemned as pessimists. To-day, however, we all realise that Great Britain and her colonies need an army like any great continental Power. We have obtained it, and as we have adopted the scale of payment which was fixed when competing with the labour market for volunteers, an unanticipated result follows—the poorer sections of our population were never so well off, though the cost of provisions has doubled. They were never so well clothed or so well fed as at the present time. It is necessary, however, to bear in mind that this is a state of affairs that cannot always continue. Though our financial situation may be stronger than that of any other nation, we cannot bear such a burden indefinitely. We must also contemplate the possibility that peace may not liberate us from the necessity of holding a huge army in readiness. We shall then have the same struggle to pay our army of the future as the continental Powers have to pay their present armies. If we have to support a large army after peace has been declared the question of feeding our population when a large proportion of the males are mobilised will come home to us: it is to-day a matter of vital importance for our allies.

Soldiers Supported by their Families.

It is indeed extremely difficult for the inhabitants of these islands to realise the immense sacrifice made by the peoples of the continent. During a recent tour in France I organised, with the approval of M. Poincaré and aid of the French authorities, a series of 25 meetings in all parts of the country. Such authorised representatives of British labour as Mr. George H. Roberts, M.P. (Junior Lord of the Treasury), Mr. John Hodge, M.P., and Mr. J. A. Seddon, a former President of the Trade Union Congress, accompanied me, and we endeavoured to explain the extent and importance of the aid Britain gave in waging the war. Of course, we were able to make a good show. The vast number of volunteers who flocked to our standards showed the nation to be capable of patriotic devotion. But if the French soldiers are not volunteers it also must be borne in mind that they are not paid. The French soldier used to receive ½*d.* per day; since the war this has been increased to 2½*d.*, or 25 centimes per day. How is the family of a man who is receiving 2½*d.* per day to be fed. As a matter of fact, it is not the soldier who keeps the family, but it is the family who keep the soldier. Here, then, we have a tremendous difference between the paid British soldier, with an allowance added to his pay for his wife and children, and the Frenchman, who to all intents and purposes serves his country gratuitously. The 25 centimes now allowed at best only serves to reduce a little the money that every family sends to its fighting members at the front so that they may be able to buy postage-stamps, tobacco, and occasionally some little luxuries. But all families have not the means to do this and keep themselves as well, and the problem presented is often found very difficult. How are poor families to be kept alive when the bread-winner has not only ceased to support them, but expects to receive some aid from them?

The position has been anticipated and prepared for in France ever since 1871. The exigencies of national defence have largely contributed to develop the wonderful thrift of the people, a quality that has enabled France to recover gaily from disasters that would have beaten down other nations. Practically no Frenchman marries till he has accomplished his term of barrack life and military training. During this period he has received his pocket money from his parents; and in marrying he prepares to send, in his turn, money to any sons whom he may have when it comes to their turn to serve. After three years with the colours he is for 11 years in the Active Reserve, and during the 21 days of annual training his wife and children practise running his business in his absence. Then for seven years more he is in the Territorial Army, and for yet another seven years in the Territorial Reserves. Thus for 28 years of his life every Frenchman may have to abandon his business and leave his family without any resource for a certain period in the year. During that period his family learn to take his place.

Separation Allowances and Moratorium for Rent.

In the majority of cases the French families, long warned as to what to expect, had made provision to face the emergency when war broke out. But this was obviously not possible among the worst-paid section of the labouring classes. Also, there was a quite large class that was not altogether without means to meet the exigencies of mobilisation, but had not sufficient to face the entire expense. For such people the moratorium on rent often sufficed, and it secured a roof over the heads of even the most desperate cases. The wife and the children of the French soldier have no claim to a separation allowance; yet from the first it was felt that those who had failed to make provision in case of mobilisation could not be left to die of starvation. Also, it is readily acknowledged that the badly paid sections of the working class could not be expected to make a sufficient, if any, provision. Then there was a considerable number of persons, many of them single women, who were entirely thrown out of employment by the war. It was the general opinion that relief should, indeed must, be given where genuine need could be proved. The amount at first was fixed at a franc per day per adult and half a franc per child. This has now been increased to 1.25 fr., or 1*s.*, per day for an adult, and 75 centimes, or 7½*d.*, per day for a child. As this relief comes from municipal funds and various other sources, there is some variety in detail. Thus, outside Paris more relief in kind is given than within the walls of the capital. However, the great point of contrast with what prevails in England is that the wives and children of soldiers only get relief in cash when existence of distress is demonstrated, and even then the sum allowed is very small.

With the present high cost of provisions, and even with the moratorium on rent, 1*s.* a day is not enough to live upon. Also, if at first the purchase of clothes could be deferred, now that the war is lasting two years and more obviously new clothes are needed. Therefore other help is necessary. To organise this help the trades unions and the Socialist Party took active steps in August, 1914. With more than a hundred representatives in Parliament they were able to bring considerable pressure to bear on the Government, and the Government very wisely authorised those who were in nearest touch with the poorer sections of the community to organise the distribution of the needed relief. The folly of allowing families with only a few shillings per week to buy their food at retail prices and then cook it at home, especially when coals cost from £3 to £4 a ton, was evident. The Socialist Party therefore and at once placed the whole of their organisation, their local committees and their knowledge of each locality, at the service of the State so as to provide cheap meals for the families of soldiers, for refugees from Belgium, the invaded provinces of France, and for those who had been thrown out of employment through the war.

Organising Meals for 3½d.

It was soon ascertained that on an average a meal cost in raw material, if bought at wholesale prices, and without counting fuel, labour, or rent of premises, 30 centimes, or 3*d.* But of late the rise in prices has increased the cost to 35 centimes. Empty premises were found somehow: abandoned pleasure booths, as in the gardens of the Buttes de Chaumont, deserted cinematograph halls, or unoccupied shops. Then voluntary labour was gladly offered, and municipalities and influential personages got fuel, if not for nothing, nevertheless at a price much under its market value. But who was to pay the 3*d.*, now 3½*d.* As this is not a question of relieving paupers, but, on the contrary, of helping some of the worthiest members of the population who were only suffering because the adult

male members of their families were fighting for their country; and as further these people, though very poor, were nevertheless receiving at least a small allowance, it was thought only right and calculated to preserve their sense of self-respect to call upon them to contribute to the cost. Therefore they were charged 1*d.* per meal. The rest of the money comes from various sources, the municipal funds and the Secours National being the principal. The latter organisation is not unlike our Prince of Wales's Fund, and it now gives 1½*d.* per meal served. Since August 17th, 1914, to March 31st, 1916, the Secours National has handed over to the special fund administered by the General Confederation of Labour £181,768 for the provision of meals. There are other special funds, notably a fund to give meals to families of the professional classes and to artists who are in distress through the war and to women about to become mothers.

Penny Soup.

There is in Paris an institution called Les Fourneaux Economiques, founded long before the war by the sisters of St. Vincent de Paul. These kitchens are established in various parts of Paris and they sell half a litre of soup for 1*d.* No one at home, especially if we count the cost of fuel, could make such good and nutritious soup for so small a sum. This institution, assisted by the Secours National, has had its scope of action greatly increased so as to help to meet the emergencies created by the war. As meat soup takes several hours to make, during which time terribly expensive fuel is consumed, it is a great saving to be able to purchase soup already made at so small a price. Indeed, though sold at 1*d.* the half-litre it actually costs in raw material not 10 but 12 centimes. It is generally made of a big piece of lard, some bones, a little meat, and, of course, a considerable variety of vegetables, with a dash of garlic and some laurel leaf and thyme to flavour. One excellent way to both colour and heighten the flavour of the soup is to broil the bones slightly before putting them into the cauldron, but I would not venture to say that this is done everywhere. Of course, these advantages are not offered to the public at large, otherwise many persons who can quite well afford to feed themselves, if unscrupulous, might apply. On the other hand, an applicant is never refused on first application, even if he has no card, but the name and address are demanded and an inquiry is made. If the result is satisfactory a card is given, otherwise the applicant cannot return. As a matter of fact, people rarely go to these places unless they are in great difficulties, and then help is very readily given. It may be said, however, that this distribution of soup is not very much encouraged. It is felt that if people are so poor as to need soup it would be very much better to give them a full meal.

Fortunately I am able to record that there is a very great reduction of the former widespread poverty and distress that prevailed at the commencement of the war in Paris and other industrial centres. Thus, in the Montmartre district of Paris I found that now barely more than 600 portions of soup are disposed of in the course of a day. In the past winter there was a demand for at least 2000 half-litres of soup in the 24 hours. This shows a great increase in employment, civil and military.

Catering and Cooking.

There are two or three establishments in each of the 20 arrondissements of Paris where these meals are bought and cooked. Some of these I was able to inspect, and my first visit was to Mme. Faure, who has established herself in an abandoned cinematograph hall in the rue de Torcy in the populous district of La Chapelle. Here I found a number of women busily engaged sewing. They were volunteers striving to earn the £4 per month charged as rent for the premises. Further, Madame Faure gleefully explained how, by the ingenious utilisation of high influences and protection, she had managed to get some coal at £2 a ton, for which most people paid £3 10*s.* or £4 the ton. Then she had to go to the Central Market very early in the morning and was thus able to buy meat and vegetables some 25 per cent. cheaper than from local tradesmen. But she had not attempted to roast any of the meat, that was far and away too extravagant. It was cheaper to make stews, especially of mutton and veal. The beef, first used for soup, was served later with onion sauce. The onions were fried in pork and in beef fat. The sauce thickened by flour sprinkled and made red in the boiling fat, then diluted with a very little water and a dash of vinegar. This constitutes a *bœuf miroton*. Sometimes the sauce is diluted not with water but with a little red wine, then we have a *bœuf bourguignon*. The meal consists of soup, meat, vegetables, and bread; and a rich, appetising sauce ensures the eating of a large quantity of bread. If the allowance of meat is not large the diner can eat enough bread and sauce to constitute a sufficiently nutritious meal. Vegetables are generally served as a separate course, and lentils and rice are the least appreciated, but this, again, depends on the art with which they are cooked. At the rue de Torcy some 1800 meals of this description are served per day, costing in raw material, as already stated, 35 centimes each. The service is done by soldiers' wives who are members of the Socialist party, and they hope to thus give an object-lesson in collectivist enterprise.

At the Buttes de Chaumont the concert and dancing hall of a pleasure-garden had been converted into an eating-place and an outside shanty into a kitchen. Some potatoes had been boiled in beef and bone stock and flavoured with onions, garlic, and fine herbs, notably with chervil. They were appetising. Otherwise I was not favourably impressed; the arrangements were rough, and the portions of meat given perhaps too small. Of course, the meals differ according to the accommodation secured and the skill of the cooks, and the knowledge and ability of those who purchase the provisions. At first the discrepancies were very great, most of the helpers having no experience whatsoever. But with the quick adaptability of the French character, those who did not know soon learnt. Those who did not manage very well found out how to imitate those who were more successful. Thus to-day, though there are still considerable differences, a greater uniformity nevertheless prevails.

By far and away the best place I visited was in the rue de la Crimée. But perhaps a comparison is hardly fair, for these are well-aired, extensive premises built shortly before the war for a large, popular restaurant. There are modern kitcheners, a hot plunge-bath for the rapid washing of plates, well-trained assistants, and a professional chef to direct and manage. Here they ventured on roasts, and on the day of my visit there was veal beautifully roasted with brown and golden tints that could not but provoke the appetite. The bones from which this veal had been cut were broiled by exposure to a brisk fire, then boiled in water. The stock thus obtained was added to the lard and the fine herbs in which haricot beans are cooked. Thus tastily prepared, the haricot beans constitute a substantial and agreeable adjunct to the meat. A Belgian refugee makes at this centre excellent sausages that are sometimes preferred to meat. In the evening a lighter meal is given, consisting first of vegetable soup, in which, however, a considerable quantity of animal fat or butter is introduced, then some cheese, or fruit and a glass of wine or cider. Wine is becoming rare because last year's vintage was below the average and the greater part of the cheap wines are bought up for the army. Nevertheless it was satisfactory to note that a certain number of those who were dining were able to bring a little wine with them. They are not allowed to bring a large quantity; indeed, if they can afford large quantities then they would not be entitled to these cheap meals.

None Need Starve.

Altogether it is a great satisfaction to know that, notwithstanding the mobilisation of the entire available male population, no one need starve in Paris. Of course, the war has not interfered with the free feeding of the children attending the elementary schools. On the contrary, this has been done with even greater care than usual. And now that adults can get a full meal for 1*d.* it does not seem as if there should be any actual suffering from hunger, even though soldiers are not paid and there is no separation allowance for their wives and children unless they can prove actual distress.

SOCIETY OF MEDICAL OFFICERS OF HEALTH: SCHOOL MEDICAL SERVICE GROUP.—The annual meeting of the School Medical Service Group of the Society of Medical Officers of Health will be held on Saturday, June 10th, at 3 P.M., at 1, Upper Montague-street, Russell-square, London, W.C. Although many school medical officers have already accepted commissions, while others are doing extra duties, it is hoped that the meeting will be well attended, as the relation of the group to the parent society and other bodies will be considered, reports received, and officers elected.

A MONTHLY RECORD OF ATMOSPHERIC POLLUTION.

THE returns in many instances have not been forthcoming, but we publish in one table a summary of the reports for three months—viz., November and December, 1915, and January, 1916—instead of for one month as heretofore. A large number of stations have discontinued making observations owing to the reduction of staff. There are no returns from Manchester stations at all, while in the cases of Kingston-upon-Hull, Leicester, Ravenscourt Park, and Wandsworth Common (two London stations) the records for November were lost owing to the breaking of the bottles by frost. It is hoped that the omissions due to shortage of staff will be made good when normal times return. The personnel of public health authorities concerned in the supervision of these examinations and of the analytical work involved remains the same as published in previous tables.

COMMITTEE FOR THE INVESTIGATION OF ATMOSPHERIC POLLUTION:

Summary of Reports for the Months ending November and December, 1915, and January, 1916.

Place.	Rainfall in milli-metres.	Metric tons of deposit per square kilometre during month.								
		Insoluble matter.			Soluble matter.		Total solids.	Included in soluble matter.		
		Tar.	Carbonaceous other than tar.	Ash.	Loss on ignition.	Ash.		Sulphate as (SO_3).	Chlorine (Cl).	Ammonia (NH_3).
Month ending Nov. 30th, 1915.										
ENGLAND—										
Exeter	41	0·02	1·14	1·97	0·82	2·40	6·35	0·96	0·49	0·01
Liverpool	54	0·22	2·68	9·23	3·26	4·45	19·84	2 01	1·31	0·20
London—										
Meteorological Office	61	0·18	1·05	5·86	2·24	7·36	16·69.	1·79	0·92	0·06
Embankment Gardens	62	0·42	5·20	9·31	2·04	6·04	23 01	3·00	0·75	0·12
Finsbury Park	79	0·61	3·60	16·84	1·21	5·71	27·97	2·30	0·28	0·04
Southwark Park	73	0·09	2·83	5·49	0·93	4·44	13·78	2 08	0·41	0·08
Victoria Park	34	0·05	0·90	3·08	1·27	5·95	11·25	2·97	0·29	0·03
Golden Lane	59	0·11	4·81	8·80	3·29	4·47	21·48	2·90	0·65	0·21
Newcastle-on-Tyne	41	0·20	3·93	6·59	1·23	2·95	14 90	1·46	0·61	0·14
York	36	0·23	1·69	2·85	3·56	4·94	13·28	2·72	0·77	0·12
SCOTLAND—										
Coatbridge	25	0·04	1·09	2·21	0·98	1·74	6·06	1·02	0·11	0·09
Greenock	74	0·12	2·36	4·06	1·70	2·79	11·03	1·57	0·33	0·16
Leith	23	0·06	1·19	2·92	0·94	2·53	7·64	1·09	0·35	0·09
Month ending Dec. 31st, 1915.										
ENGLAND—										
Exeter	174	0·02	1·38	1·79	3·13	4·30	10·62	1·42	1·39	0·04
Kingston-upon-Hull	102	0·13	2·79	3·64	3·69	4·50	14·75	2·83	0·40	0·06
Leicester	117	0·14	1·29	3·52	6·94	4·89	16·78	2·79	0·79	0·15
Liverpool	135	0·31	3·43	5·60	3·78	8·62	21·74	3·88	1·29	0·26
London—										
Meteorological Office	106	0·06	3·88	0·14	Nil.	8·53	12·6	1·95	1·13	0·07
Embankment Gardens	118	0·25	3·90	7·32	1·70	8·91	22·08	4·60	1·09	0·10
Finsbury Park	121	0·10	1·43	3·34	0·82	4·27	9·96	2·47	0·56	0·06
Ravenscourt Park	109	0·07	0·94	2·58	1·13	4·35	9·07	2·19	0·35	0·06
Southwark Park	117	0·20	3·09	6·55	1·54	9·10	20·48	2·70	0·87	0·12
Wandsworth Common	118	0·03	1·39	4·04	1·65	4·26	11·37	2·44	0·71	0·03
Victoria Park	81	0·04	1·06	3·51	1·29	6·07	11·97	2·84	0·43	0·02
Golden Lane	117	0·06	2·99	3·43	5·14	5·61	17·24	4·05	1·06	0·23
Newcastle-on-Tyne	156	0·26	3·59	4·79	4·37	7·80	20·81	4·12	1·11	0·33
York	121	0·24	1·52	2·34	5·07	6·03	15·21	3·48	0·85	0·21
SCOTLAND—										
Coatbridge	63	0·09	2·06	3·29	1·46	2·94	9·84	1·60	0·18	0·20
Greenock	109	0·11	2·91	4·36	2·12	4·49	13·99	2·78	0·85	0·25
Leith	80	0·06	1·54	3·15	3·82	3·18	11·75	2·21	0·57	0·32
Month ending Jan. 31st, 1916.										
ENGLAND—										
Exeter	23	0·01	0·90	2·11	0·61	2·23	5·86	0·82	0·47	0·02
Kingston-upon-Hull	19	0·13	1·78	2·88	0·96	2·23	7·98	0·94	0·39	0·02
Leicester	28	0·20	2·12	2·57	0·98	2·57	8·44	1·29	0·38	0·10
London—										
Meteorological Office	29	0·05	Nil.	2·37	1·17	3·52	7·00	1·40	0·87	0·04
Embankment Gardens	42	0·16	2·54	4·89	3·28	6·94	17·80	3·24	1·98	0·10
Finsbury Park	39	0·08	1·69	5·18	1·33	3·96	12·23	1·85	0·60	0·04
Ravenscourt Park	39	0·05	1·07	3·15	0·98	4·66	9·91	2·22	0·17	0·06
Southwark Park	41	0·16	2·53	5·36	2·56	6·11	16·71	2·83	0·93	0·09
Wandsworth Common	23	—	0·35	1·13	0·67	2·43	4·47	1·09	0·30	0·02
Victoria Park	52	0·05	0·99	5·93	3·48	7·72	18 17	3·77	0·81	0·06
Golden Lane	29	0·07	2·36	3·20	1·52	3·51	10·66	1·82	0·79	0·07
Malvern	26	0·00	0·05	0·10	0·41	1·67	2·23	0·61	0 28	0·00
Newcastle-upon-Tyne	23	0·15	2·44	4·36	1·12	2·52	10·59	1·28	0·22	0·10
York	19	0·11	1·19	2·69	1·19	1·62	6·80	0·68	0·52	0·03
SCOTLAND—										
Coatbridge	108	0·11	2·19	7·18	1·48	6·16	17·12	1·90	1·45	0·11
Greenock	136	0·19	1·09	2·10	1·86	6·34	11·59	1·88	2·75	0·18
Leith	40	0·06	1·02	3·32	1·85	2·78	9·03	1·30	0·69	0·18

"Tar" includes all matter insoluble in water but soluble in CS_2. "Carbonaceous" includes all combustible matter insoluble in water and in CS_2. "Insoluble ash" includes all earthy matter, fuel, ash, &c. One metric ton per sq. kilometre is equivalent to: (*a*) Approx. 9lb. per acre; (*b*) 2·56 English tons per sq. mile; (*c*) one gramme per sq. metre; (*d*) 1/1000 millimetre of rainfall.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

Petrol for Medical Practitioners.

THE arrangement by which the military authorities granted permits for petrol consumption has been abandoned, and in some places, as in Belfast, the police now take charge. The city is divided into areas, and the inconvenience is avoided of hundreds of people assembling each day in the military barrack-square. In Dublin restrictions no longer exist, and it is hoped that they will be removed throughout Ireland as far as doctors are concerned. It is said there is no shortage of petrol.

The Death of Dr. C. E. FitzGerald.

I regret to announce the death, which took place on Saturday, May 27th, of Dr. Charles Edward FitzGerald, who was Surgeon-Oculist to the King in Ireland and formerly President of the Royal College of Physicians of Ireland.

The Winter in Ireland.

The weather in Ireland presented some marked and exceptional features in the past winter. As in Great Britain, January was exceptionally warm and dry, but it was followed by two severe months of persistent cold, with much rain in February, and rain, sleet, and frequent snowstorms in March. Sir John Moore, in a paper read before the Section of State Medicine of the Royal Academy of Medicine in Ireland, recently dealt at length with these climatic conditions and discussed the bearing of them upon the health of the community. The rainfall in Dublin for the six months ending March 31st exceeded 21 inches, being more than 7 inches in excess of the average. Of this 2·5 inches were accounted for in a tempestuous downpour lasting two days towards the middle of November. The copious precipitation in March came with cold north-east wind and was largely in the form of hail and snow. Besides the usual factors of distribution of atmospheric pressure and resulting prevalence of winds, Sir John Moore adduces the presence in the atmosphere of an undue quantity of matter in the form of dust, chemical or otherwise. The harmful effect on human life of the raw cold of February and March was shown by an increased mortality from diseases of the respiratory system, and especially in Dublin by a high incidence of pneumonia. In the first seven weeks of 1916 the registered deaths in Dublin from pneumonia numbered 70. In the second period of seven weeks 133, or an increase of 90 per cent. Comparing the same periods the increased mortality from respiratory affections in general was 108 per cent. Attention has been called to the effect on health of the fierce storms of March, and the early months of 1916 will long be remembered by many for their high incidence of respiratory diseases.

The King Edward VII. Memorial, Belfast.

The final meeting of the executive committee which had charge of the erection of the magnificent memorial to King Edward VII. at the Royal Victoria Hospital, Belfast, was held on May 24th, in the City Hall, Belfast. The object of the memorial is to provide an electrical department, a department of vaccine therapy, and one of physiological chemistry. After payment of all accounts, and setting aside a sum of £1087 for the purchase of further special scientific apparatus, there remains a balance of £80 12*s.* 4*d.* When those who will have charge of the special departments return from military duty there is no doubt that the work carried on in the new buildings will be of the greatest public value.

The Recent Rebellion: The Treatment of the Prisoners.

There have been complaints of the conditions under which these prisoners were confined prior to their deportation or release. In addition to the rebels who surrendered or were captured in arms, a large number of persons were arrested in the streets or houses on suspicion of complicity. All the prisoners are stated to have been treated alike without distinction as to the charges which might be subsequently brought against them. The complaints made by those who have since been released are that they were crowded in excessive numbers into ill-ventilated rooms without furniture of any kind, that food was insufficient and irregular in distribution, and sanitary conveniences wanting. The critics made no allowance for the fact that the military authorities, fresh to Dublin, had to deal suddenly with several thousands of prisoners whose custody was necessarily their first care. Indeed, the troops themselves for some time were not better off than the prisoners. Matters have since been set right, though perhaps after unnecessary delay; but early last week the military authorities invited the press to visit the Richmond Barracks and inspect the satisfactory conditions under which the prisoners are confined.

Ulster Medical Society.

At the annual meeting of the Ulster Medical Society held in the Medical Institute, Belfast, on May 25th, the following office-bearers were elected for session 1916–17:—President, Mr. R. Campbell; Vice-Presidents, Professor W. St. Cl. Symmers and Mr. H. A. J. S. Murphy (Lisburn); Members of Council, Mr. H. Stevenson, Mr. R. J. Johnstone, Mr. W. Burns, Mr. T. A. Davidson, Dr. F. Coates, Dr. F. C. Smyth; honorary treasurer, Dr. V. G. L. Fielden; honorary librarian, Dr. W. L. Storey; honorary editorial secretary, Dr. C. G. Lowry; and honorary secretary, Mr. S. T. Irwin.

May 29th.

KING EDWARD'S HOSPITAL FUND FOR LONDON.

THE annual meeting of the Governors and General Council of this Fund was held on May 24th at St. James's Palace, when the SPEAKER of the House of Commons presided.

Lord REVELSTOKE, the honorary treasurer, in presenting the account of receipts and expenditure and the balance-sheet for the year ending December, 1915, said that the income from investments was larger than ever before, this being primarily due to the receipt of a full year's income from the first instalments of the Wernher legacy. Out of the whole of the revenue from the investments under the care of the Finance Committee, a revenue amounting to £97,000, the total loss to the income of the year through failure to pay interest or dividends since the war began amounted to less than £800, but notwithstanding this a sum of about £50,000 had still to be raised in order to maintain the distribution at last year's figures, without allowing for any increase in the needs of the hospitals. Since the beginning of the year notification had been made of the munificent bequest of the residue of the estate of the late Dowager Lady Wilton, estimated at about £150,000, of which sum £100,000 had already been received on account.

On the motion of the CHAIRMAN, seconded by Sir T. VEZEY STRONG, the adoption of the accounts was carried unanimously.

Sir SAVILE CROSSLEY presented the draft report of the General Council, which stated that the total receipts for the year 1915 were £226,779 19*s.* 5*d.*, of which £12,949 17*s.* 9*d.* were contributions to capital and £213,830 1*s.* 8*d.* receipts on general account, made up as follows: annual subscriptions, £25,724 16*s.* 11*d.*; donations, £5360 16*s.* 3*d.*; contribution from League of Mercy, £14,000; special donation from Sir Ernest Cassel (4½ per cent. War Stock), £28,000; from the Lewis Estate, £34,121 8*s.* 1*d.*; other legacies, £4412 10*s.* 7*d.*; dividends and interest from investments, £97,218 1*s.* 9*d.*; dividends and interest collected in 1915 but relating to 1914, £4792 8*s.* 1*d.*; from the trustees of the Bawden Fund, £200. The amount originally appropriated for distribution was £140,000, being the same amount as in 1914. Of this, £133,500 were allocated to London hospitals and £6500 to consumption sanatoria and convalescent homes taking London patients. These totals were increased by the supplementary grants in respect of Sir Ernest Cassel's gift to £168,000: £160,200 and £7800 to the two classes of institution respectively. Of the £133,500 allocated by the Fund from its ordinary resources to the London hospitals, £111,775 were granted in aid of general maintenance, £5750 to the reduction of debts on maintenance account, and £15,975 towards schemes of buildings or improvements; the supplementary grants following the same apportionment. The £6500 distributed by the Convalescent Homes Committee

(apart from the supplementary grants of £1300 War Stock) were allocated as follows: £4560 to convalescent homes and £1940 to consumption sanatoriums. The total sum distributed amongst hospitals, convalescent homes, and consumption sanatoriums during the last ten years (after deducting conditional grants to the extent of £7500 that have been allowed to lapse), was £1,484,750. Since the foundation of the Fund a total amount of £2,098,416 8*s*. 5*d*. had been distributed. The first million had been passed in 1909, the thirteenth year of the Fund. It had taken six years for the grants to reach the second million. The average annual distribution for the whole period of 19 years had been £110,442 19*s*. 4*d*. During 1915 the amount spent on administration was £3205 16*s*. 1*d*. or £1 8*s* 3*d*. per cent. of the total amount received, as compared with £3178 6*s*. 5*d*. or 12*s*. per cent., the previous year. The corresponding percentage for the whole period since the inauguration of the Fund had been £1 4*s*. 7½*d*., and the average yearly outlay in this respect had been £2819 0*s*. 7*d*. His Majesty the King, Patron of the Fund, had been graciously pleased to continue his annual subscription of £1000, and Her Majesty Queen Mary, Her Majesty Queen Alexandra, His Royal Highness the Prince of Wales, and many other members of the Royal Family, had also again honoured the Fund with subscriptions. The list of contributors included annual subscriptions of £5000 from Mr. Walter Morrison, £4000 from the Drapers' Company, £1000 from Lord Astor, and £1000 from the Merchant Taylors' Company; besides an anonymous donation of £1000. The Fund had also received annual subscriptions of £500 from the City Corporation, from Lord Iveagh, from Sir John R. Ellerman, Bt., from Mr. Robert Fleming, from Messrs. Morgan, Grenfell, and Co., and from Messrs. N. M. Rothschild and Sons; and donations of the same amount from the Cloth-workers' Company, and from "S.D.R.S.D." The League of Mercy had again contributed £14,000. The total amount received from the League of Mercy since its foundation in 1899 now amounted to £230,000, apart from the sums awarded by the League to institutions outside the area of the Fund's distribution. In order to maintain the distribution on the same scale as that of the last two years, an annual sum of nearly £50,000 had to be raised from subscriptions, donations, and legacies. The total amount received from annual subscriptions and donations during 1915 (apart from the gift of Sir Ernest Cassel) showed, as compared with 1914, a decrease of £162 8*s*. 4*d*., while the receipts from legacies (other than the Lewis and Harman bequests) were £24,083 18*s*. 8*d*. less than in the previous year, and were £27,482 6*s*. 10*d*. less than the average of the five years 1910–1914.

The CHAIRMAN having formally moved the adoption of the report, the Earl of BESSBOROUGH seconded, and the motion was carried unanimously.

Sir WILLIAM CHURCH (chairman of the Distribution Committee) moved the adoption of a report of that committee on the expenses of the Bland-Sutton Institute of Pathology at the Middlesex Hospital. The report recommended that the scheme of apportionment between hospital and medical school now submitted by the hospital should be accepted as regards the year 1915 as satisfying the condition attached to the grants made by the Fund in December last—namely, that the expenditure should be allocated in the accounts for 1915 in accordance with a scheme of apportionment to be approved by the Fund. This was seconded by Sir JOHN TWEEDY and carried *nem. con.*

In the absence of Dr. Freshfield (chairman of the Convalescent Homes Committee), Sir WILLIAM H. BENNETT moved the adoption of a report of that committee on the subject of a special application from the National Association's sanatorium at Benenden. The report, which was seconded by the President of the Royal College of Surgeons of England (Sir W. WATSON CHEYNE) and adopted, recommended that the committee be empowered under certain circumstances to promise and if required to pay over an emergency grant of a limited amount.

In the course of some remarks in reply to a vote of thanks the CHAIRMAN said that as the war continued the margin of eleemosynary funds available for the general charities of the country must shrink to a considerable extent. There must be no disappointment if at the meeting next autumn, or this time next year, the Fund had to report a considerable shortage.

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

THE following appointments have been notified:—Fleet-Surgeons: T. T. Jeans to *Victory*; P. H. Boyden and W. G. Thwaytes to *President*; P. H. Bannister to *Fulmouth*; and J. P. H. Greenhalgh to *Pembroke*, additional. Staff-Surgeons: R. Kennedy and N. H. Harris to *Pembroke*; and B. S. Robson to *Birmingham*. Temporary Surgeons: P. W. Carruthers to *Pembroke*; and R. P. Ninnis to *Neptune*.

ARMY MEDICAL SERVICE.

Surgeon-General Sir William Babtie, V.C., K.C.M.G., C.B., to be a Director of Medical Services at the War Office.

Colonel Roger Kirkpatrick, C.M.G., on completion of four years' service in his rank, is retained on the Active List.

ROYAL ARMY MEDICAL CORPS.

Lieutenant-Colonel Charles T. Blackwell is retained on the Active List.

The undermentioned temporary Captains relinquish their commissions: C. E. Murphy, E. A. Evans, Sir Vincent Nash, A. Waugh, and N. L. Prichard.

Temporary Captain H. O'Callaghan relinquishes his commission on account of ill-health.

E. D. Pullon to be temporary Captain.

Temporary Lieutenants to be Temporary Captains: P. J. Maguire, W. F. Dunlop, G. J. Adams, J. F. Carruthers, A. S. Seabrooke, M. Kirton, J. O. Thomas, J. N. Wheeler, C. E. Bashall, A. P. Yonge, R. T. Cooke, D. M. Callender, G. A. Jelly, R. W. T. Clampett, J. A. R. Lee, S. J. A. Beale, F. J. Dunne, G. I. Moriarty, G. H. Wood, C. Armstrong-Dash, I. Macfarlane, A. Thomson, R. N. Weekes, C. M. Willmott, C. Checchi, A. J. Trinca, R. W. Ryan, N. S. Gilchrist, H. A. Hancock, J. W. N. Roberts, F. W. Stone, C. C. Finlator, H. S. Davidson, W. D. Perry, W. Penberthy, J. Boyd, A. T. Marshall, B. W. Mudd, R. C. Phelps, J. H. Bogan, D. F. O'Kelly, C. Gibson, E. S. Cuthbert, J. M. McKenzie, J. M. MacKay, D. McD. McIntyre, T. Ruddock-West, J. H. N. F. Savy, H. Adams, C. G. Shearer, A. G. B. Duncan, J. Ross, W. F. Stevenson, T. H. Scott, J. E. Judson, A. St. Johnston, T. B. Jobson, J. H. Jones, G. D Hindley, J. H. E. Davis, A. R. Roche, J. R. Dixon, J. B. Woodrow, A. L. Jackson, E. C. Abraham, W. Raffle, C. R. Denny, G. T. MacLean, G. A. Bird, D. Fleck, C. T. Hilton, W. R. Reith, J. S. Bookless, C. F. Harford, S. V. Telfer, A. C. Renwick, G. L. Neil, G. E. Lockyer, J. Kean, R. T. Herron, E. E. Frazer, A. Crawford, R. H. G. Weston, C. C. Cragg, A. Richmond, G. McMullan, A. MacK. Clark, R. F. Yencken, A. J. C. Tingey, J. R. Pate, C. E. Price, W. S. Nason, G. S. Miller, R. J. Ledlie, J. H. Hebb, C. Coventry, R. T. Cox, J. Howe, W. R. Main, A. H. Mountcastle, W. F. G. Scott, T. G. Williams, O. Heath, J. McKenzie, H. D. Field, R. H. Cox, C. Crerar, S. D. Adam, W. Wallace, J. Ash, J. H. Saunders, T. H. Phillips, W. R. Watt, R. D. Brinton, G. D. Kerr, E. P. Carey, G. S. Ware, J. F. Wolfe, S. Wyborn, R. M. Stewart, H. Spinks, T. F. B. Reid, F. W. Rowland, C. C. Harris, M. D. Eder, R. Park, E. W. Blake, B. Pickering, H. H. Proudfoot, J. T. Macnamara, A. G. K. Ledger, A. Randle, R. A. M. Macleod, B. H. Shaw, M. A. McKeever, J. H. Hart, N. Devereux, J. H. Drew, J. G. Murray, W. G. R. Macauley, G. M. Bluett, R. T. Raine, H. Harvey, W. A. Rogerson, D. L. Hutton, W. J. Harris, J. B. Dalton, C. M. Brophy, C. E. Fenn, E. G. Sworder, A. D. Blakeley, T. M. Crawford, A. L. Paliologus, R. Hughes, H. P. D'A. Benson, M. Ashley, W. S. Stalker, C. Loddiges, W. M. S. Robinson, A. F. Wright, A. Adams, R. F. Russell, G. Holroyde, W. Russell, H. E. Griffiths, R. W. Long, E. T. Larkham, A. E. Quine, C. R. H. Crawford, E. C. Pratt, R. J. Bonis, H. M. Agnew, A. W. Forrest, J. B. Baird, J. D. Batt, J. F. Broughton, J. L. Waller, J. J. Robertson, H. H. Carleton, E. G. Rawlinson, E. J. Morton, E. A. C. Swainson, C. Bennett, J. W. Innes, R. R. Pirrie, J. W. McCagie, G. S. Douglas, E. H. Walker, J. Coutts, A. J. McCreadie, G. Miller, R. MacN. Marshall, C. L. G. Powell, J. Muirhead, H. M. Brown, A. J. Hickey, R. R. Duncan, E. T. Roberts, A. W. D. Coventon, E. G. D. Pineo, John V. Brown, A. F. Mavety, R. E. Horkins, R. L. Shields, J. M. MacPhail, A. A. Cooper, C. H. Newton, T. F. Dillon, T. Gilchrist, H. C. Thorp, G. W. Thompson, J. D. MacKinnon, V. H. Blake, R. J. Batty, W. J. Dunlop, J. C. Turnbull, G. B. Simpson, W. Harmens, C. B. Pearson, B. Jones, L. Lane, D. McF. Livingstone, F. B. G. Stableford, M. A. Milne, J. M. Morrissey, H. F. Vandermin, G. N. Urie, J. W. Sutherland, M. H. Paterson, G. C. Anglin, J. F. McLay, L. M. Dawson, J. E. Knox, O. J. Day, K. G. McKenzie, H. Crassweller, T. O. Hutton, C. G. Sutherland, S. C. H. Moberley, O. Shields, H. Yellowlees, A. T. Nankivill, R. H. King, J. M. Elliott, J. M. Campbell, J. Buchanan, D'A. I. Hamilton, J. M. Young, L. E. V. Every-Clayton, G. H. Russell, S. Waddell, J. D. Marshall, L. A. J. Graham, A. B. Gordon, G. H. Keene, S. V. P. Pill, J. F. Hammond, W. A.

Anderson, C. Reidy, W. P. Cooney, J. Dixon, A. C. B. McMurtrie, H. T. Newling, H. E. Collier, H. L. Attwater, T. Jays, J. E. L. A. Turnley, G. Stoddart, S. J. Rowntree, J. A. W. Watts, A. V. Craig, G. W. R. Rudkin, snd A. Ferguson.

The undermentioned temporary Lieutenants relinquish their commissions:—F. G. M. Simpson, J. Campbell, E. A. Bullmore, T. E. Dobbs, T. H. Gandy, T. A. Collinson, N. T. Bond, F. J. Blackley, G. C. Stewart, A. E. Stenning, J. C. Martin, T. Wright, G. H. Culverwell, J. Brunton, H. L. Cumming, A. G. J. Thompson, J. H. Heddle, S. F. Smith, G. F. C. Walker, W. Magner, T. Clifford, M. G. McElligott, D. V. O'Connor, S. J. Wareham, D. O. Twining, F. S. Beachcroft, R. Harrison, J. M. Bennion, F. Jubb, J. Bowes, A. S. Webley, W. E. Cooper, J. Campbell, and I. D. Hayes, on account of ill-health.

The undermentioned temporary Honorary Lieutenants to be temporary Lieutenants:—H. Lewis, A. Wilson, A Sutherland, P. R. O'R. Phillips, L. Gameson, N. G. Mottram, and H. M. Moran.

Canadian Army Medical Corps: Lieutenants to be temporary Captains: H. G. Wood, A. J. Martin, H. C. Moses, and D. G. Turnbull. To be temporary Lieutenants: L. E. Bolster, W. G. Shaw, W. A. Cardwell, D. P. Lucey, R. C. B. Briscoe, F. R. Wilson, G. H. Fraser, P. A. Rostant, J. Dickson, C. Harris, H. E. H. Tracey, G. W. Ronaldson, G. Stivala-Aspinall, R. J. Arundel, A. R. C. Doorley, R. M. de Mowbray, E. L. K. Sargent, D. J. Roantree, A. E. A. Carver, H. F. B. Bodvel-Roberts, J. M. Johnstone, J. F. Penman, C. T. Darwent, D. Corry, S. J. W. Donald, J. S. Rowlands, W. MacAdam, T. G. Evans, D. J. Harries, S. A. Burn, V. A. Crinks, H. R. Helsby, A. K. Henry, J. Keyms, A. W. Owen, E. H. Price, D. Ranker, T. L. Jones, W. Reynolds, S. B. Turner, R. L. MacK. Wallis, H. R. Hodgkinson, J. Cairus, W. G. Marsden, G. N. Brandon, J. M. W. Morison, W. Turner, F. Shannon, J. Elliot, E. H. Montgomery, H. M. Drake, G. Arthur, D. I. Dakeyne, J. J. Moriarty, C. A. R. McCay, C. W. Von Bergen, J. A. Hope, H. F. Ferguson, J. McGarrity, W. Fraser, R. W. Miller, R. D. L. Greene, E. J. B. Moynihan, D. Gaston, H. H. Crickitt, A. Smirthwaite, A. Campbell, R. H. Balfour-Barrow, G. W. Doran, W. T. Evans, H. M. Gray, D. M. Smith, J. Manuel, H. Joslen, P. L. Blaber, W. Spiteri, C. T. Cheatle, A. T. Thurston, H. S. Raper, D. A. Farquharson, J. A. H. Vanderwert, and K. Elmes. To be temporary Honorary Lieutenants: G. Moulson, H. K. Graham-Hodgson, E. G. Howell, N. N. Hayson, K. D. Atteridge, L. W. Evans, P. S. Clarke, H. L. Hughes, and A. H. Clarke.

SPECIAL RESERVE OF OFFICERS.

Royal Army Medical Corps.

Lieutenant (on probation) D. H. Paterson is confirmed in his rank.

TERRITORIAL FORCE.

Royal Army Medical Corps.

London Field Ambulance: Captain J. M. Taylor, M.B., from a Mounted Brigade Field Ambulance, and M. T. G. Clegg (late Lieutenant (temporary Captain), London Brigade, Royal Field Artillery) to be Captain.

Welsh Casualty Clearing Station: Captain A. C. Devereux, from Welsh Field Ambulance, to be Captain.

Southern General Hospital: Lieutenants T. F. Stafford and S. E. Whitnall to be Captain.

South Midland Mounted Brigade Field Ambulance: Captain E. Whichello, from a Casualty Clearing Station, to be Captain.

South Western Mounted Brigade Field Ambulance: G. L. Findlay to be Lieutenant.

South Midland Field Ambulance: Captain W. V. Wood, from a Mounted Brigade Field Ambulance, to be Captain.

London Mounted Brigade Field Ambulance: Captain (temporary Major) W. P. Thomas relinquishes his temporary rank on ceasing to command a Field Ambulance.

Attached to Units other than Medical Units.—Surgeon-Major H. Stallard, from Notts and Derby Regiment, to be Major, and Surgeon-Major A. C. Turner, from West Riding Division, Royal Engineers, to be Major. Captain A. W. W. Swettenham relinquishes his commission on account of ill-health. Captain (temporary Major) H. F. Everett relinquishes his temporary rank on ceasing to command a Field Ambulance. Allen Iredale to be Lieutenant.

Supernumerary for service with the Officers Training Corps.—Lieutenant (temporary Captain) G. A. Williamson.

VOLUNTEER FORCE.

Liverpool Regiment: Surgeon-Major W. Richardson resigns his commission, with permission to retain his rank and to wear the prescribed uniform.

JOURNAL OF THE ROYAL ARMY MEDICAL CORPS.

In continuation of a paper published in the November issue of the *Journal of the Royal Army Medical Corps* Major C. J. Coppinger and Captain H. G. Gibson record in the May number a series of experiments in the inoculation of man with mixed vaccines containing bacillus typhosus, B. paratyphosus A, and B. paratyphosus B, with regard to the reaction produced and the antibody formation. The results of the experiments seem to point to the fact that the B. paratyphosus A content of the vaccine may not achieve its object to the same extent as that of B. typhosus and B. paratyphosus B. A report on "Trench Foot" by Captain W. Waller and Lieutenant E. K. Rideal advocates as a result of some interesting experiments the use of a salted ointment for protecting the foot against water, and Mr. Scot Skirving, of Sydney, at present surgeon to the Queen Alexandra Military Hospital, Millbank, discusses the question of reamputations in the case of non-healing stumps with protrusion of bone, many cases of which have occurred among the repatriated prisoners from Germany. Mr. J. F. Colyer, surgeon to the Royal Dental Hospital, describes the methods adopted and the experience gained in the treatment of gunshot injuries of the jaws in the Croydon War Hospital, of which he is honorary consulting dental surgeon.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

IN the 96 English and Welsh towns with populations exceeding 50,000 persons at the last Census, 8135 births and 4164 deaths were registered during the week ended Saturday, May 27th. The annual rate of mortality in these towns, which had declined from 17·0 to 14·1 per 1000 in the four preceding weeks, further fell in the week under notice to 12·5 per 1000 of their aggregate civil population estimated at 17,312,295 persons for the year 1915. During the first eight weeks of the current quarter the mean annual death-rate in these towns averaged 15·6, against 15·3 per 1000 in London. During the week the death-rate ranged from 3·7 in Wimbledon, 4·3 in Wallasey and in Wakefield, 4·6 in Gillingham, 5·0 in Swindon, and 6·0 in Enfield, to 19·2 in St. Helens, 20·5 in Middlesbrough, 20·7 in Gateshead, 21·6 in Stockton-on-Tees, and 21·7 in Bournemouth.

The 4164 deaths from all causes were 509 fewer than the number in the previous week, and included 326 which were referred to the principal epidemic diseases, against numbers declining from 431 to 352 in the four preceding weeks. Of these 326 deaths, 131 resulted from whooping-cough, 85 from measles, 53 from infantile diarrhœal diseases, 34 from diphtheria, 16 from scarlet fever, and 7 from enteric fever, but not one from small-pox. The annual death-rate, from these diseases was equal to 1·0, against 1·1 per 1000 in each of the three preceding weeks. The deaths attributed to whooping-cough, which had been 139, 125, and 128 in the three preceding weeks, rose to 131, and caused the highest annual death-rates of 1·1 in West Ham, 1·3 in Manchester, 1·7 in Walsall, 2·2 in Oldham, and 2·5 in Sunderland. The deaths referred to measles, which had been 120, 124, and 103 in the three preceding weeks, further fell to 85, and included 13 in London, 11 in Liverpool, 9 in Stoke-on-Trent, and 8 each in Manchester and Sheffield. The fatal cases of diarrhœa and enteritis (among infants under 2 years), which had been 59, 48, and 62 in the three preceding weeks, fell to 53, of which 13 were registered in London, 6 in Liverpool, 4 each in St. Helens and Manchester, and 3 in Bristol. The deaths attributed to diphtheria, which had declined from 65 to 38 in the six preceding weeks, further fell to 34, and included 6 in London and 3 each in Norwich and Middlesbrough. The deaths referred to scarlet fever, which had been 17, 18, and 15 in the three preceding weeks, numbered 16; 3 deaths were recorded in London and 2 each in Stoke-on-Trent, Birmingham, and Sheffield. The 7 fatal cases of enteric fever, of which 2 occurred in Manchester, were equal to the average in the earlier weeks of the quarter.

The number of scarlet fever patients under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, which had steadily declined from 1778 to 1444 in the seven preceding weeks, further fell to 1398 on Saturday last; 161 new cases were admitted during the week, against 153, 167, and 139 in the three preceding weeks. These hospitals also contained on Saturday last 1248 cases of diphtheria, 218 of whooping-cough, 196 of measles, 35 of enteric fever, and 1 of small-pox. The 966 deaths from all causes in London were 132 fewer than in the previous week, and corresponded to an annual death-rate of 11·7 per 1000. The deaths referred to diseases of the respiratory system, which had declined from 405 to 160 in the ten preceding weeks, further fell to 128 in the week under notice.

Of the 4164 deaths from all causes in the 96 towns, 176 resulted from violence, 323 were the subject of coroners' inquests, and 1297 occurred in public institutions. The causes of 43, or 1·0 per cent., of the total deaths were not certified either by a registered medical practitioner or

by a coroner after inquest. All the causes of death were duly certified in Leeds, Bristol, West Ham, Nottingham, Leicester, and in 66 other smaller towns. Of the 43 uncertified causes, 8 were registered in Liverpool, 7 in Birmingham, and 2 each in London, Portsmouth, Stoke-on-Trent, Coventry, and Bootle.

HEALTH OF SCOTCH TOWNS.

In the 16 largest Scotch towns with an aggregate population estimated at 2,372,000 persons at the middle of this year, 1156 births and 653 deaths were registered during the week ended Saturday, May 27th. The annual rate of mortality in these towns, which had been 15·4, 14·8, and 15·0 per 1000 in the three preceding weeks, fell to 14·4 per 1000 in the week under notice. During the first eight weeks of the current quarter the mean annual death-rate in these towns averaged 16·6, against 15·6 per 1000 in the large English towns. Among the several towns the death-rate during the week ranged from 4·6 in Clydebank, 8·9 in Kirkcaldy, and 11·1 in Motherwell, to 18·4 in Paisley, 18·7 in Perth, and 21·4 in Hamilton.

The 653 deaths from all causes were 28 fewer than the number in the previous week, and included 66 which were referred to the principal epidemic diseases, against 61 and 53 in the two preceding weeks. Of these 66 deaths, 34 resulted from measles, 10 each from diphtheria and infantile diarrhœal diseases, 9 from whooping-cough, and 3 from scarlet fever, but not one from enteric fever or from small-pox. The annual death-rate from these diseases was equal to 1·5, against 1·0 per 1000 in the large English towns. The deaths attributed to measles, which had been 27, 32, and 25 in the three preceding weeks, rose to 34, and included 22 in Glasgow, 3 each in Dundee and Leith, and 2 in Paisley. The deaths referred to diphtheria, which had been 2, 5, and 3 in the three preceding weeks, rose to 10, of which 6 occurred in Glasgow. The fatal cases of diarrhœa and enteritis (among infants under 2 years), which had been 12, 4, and 4 in the three preceding weeks, rose to 10, and included 4 in Glasgow, and 2 each in Aberdeen and Clydebank. The deaths attributed to whooping-cough, which had been 11, 11, and 17 in the three preceding weeks, fell to 9, of which 5 were recorded in Glasgow. The 3 fatal cases of scarlet fever were 5 below the average in the earlier weeks of the quarter, and comprised 2 in Glasgow and 1 in Paisley.

The deaths referred to diseases of the respiratory system, which had been 103, 103, and 106 in the three preceding weeks, fell to 101 in the week under notice, and were 40 below the number registered in the corresponding week of last year. The deaths from violence numbered 18, against 31 and 19 in the two preceding weeks.

HEALTH OF IRISH TOWNS.

In the registration area of Dublin 236 births and 155 deaths were registered during the week ended Saturday, May 27th. The deaths corresponded to an annual rate of 19·8 per 1000, or excluding 12 deaths resulting from the recent disturbances to 18·3, against 11·7 in London and 14·8 per 1000 in Glasgow.

Of the 155 deaths of all ages, 21 related to infants under 1 year and 36 to persons aged 65 years and upwards. The deaths referred to the principal epidemic diseases numbered 7, against 14 in the preceding week, and included 2 each from whooping-cough and infantile diarrhœa, and 1 each from measles, scarlet fever, and diphtheria.

The causes of 12 deaths were uncertified, while 4 others were the subject of coroners' inquests; 61 deaths occurred in public institutions.

During the same period 192 births and 128 deaths were registered in the city of Belfast. The deaths were equal to an annual rate of 16·6, or 0·1 per 1000 below that recorded in the previous week, and included 13 of infants under 1 year and 24 of persons aged 65 years and upwards. The deaths from the principal epidemic diseases numbered 8, of which 3 were referred to measles, 2 each to whooping-cough and diphtheria, and 1 to infantile diarrhœa.

The causes of 4 deaths were uncertified, 3 others were the subject of coroners' inquests, while 28 occurred in public institutions.

MEMORIAL TO THE LATE FREDERICK LAWRANCE, M.R.C.S., L.S.A.—A memorial to Mr. Frederick Lawrance, whose death, in his eighty-fifth year, occurred on May 1st, 1915, and was recorded in our obituary columns, was dedicated by the Bishop of London on May 21st at a service in St. Peter's Church, Hammersmith. The memorial consists of a chime of bells and of a marble tablet with a medallion portrait commemorating an attendance of more than 50 years at the church and a professional activity in the district the same long period. The memorial was subscribed by friends and patients of the deceased; in supplying the bells they fulfilled his cherished desire.

Obituary.

SIR JAMES FREDERIC GOODHART, BART., M.D., LL.D. ABERD., F.R.C.P. LOND.,

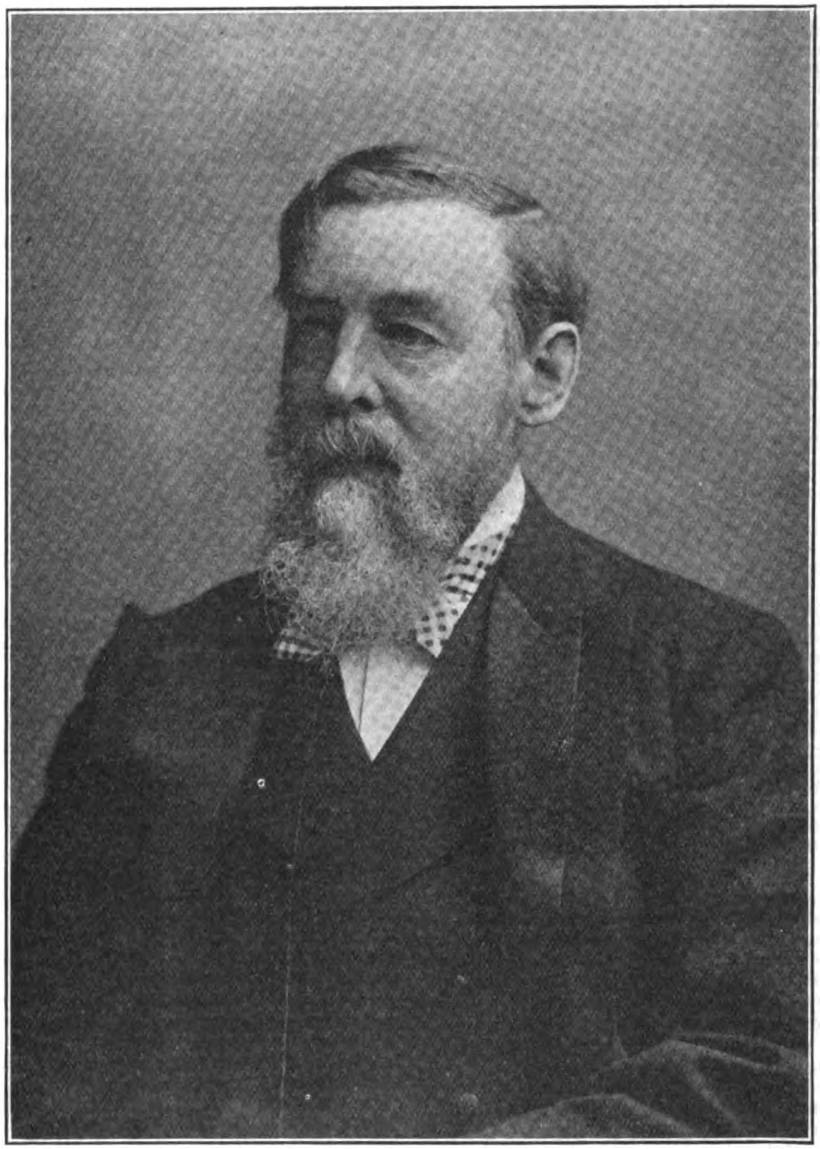
CONSULTING PHYSICIAN TO GUY'S HOSPITAL AND THE EVELINA HOSPITAL FOR CHILDREN.

WE regret to announce the death of Sir James Frederic Goodhart, consulting physician to Guy's Hospital, which occurred on Sunday last, May 28th, at his house in Portland-place, in the seventy-first year of his age.

Sir James Goodhart was born in London and received his medical education at Guy's Hospital, taking the qualification of the English Royal Colleges in 1868. In 1869 at the opening of the Evelina Hospital for Children he was appointed house surgeon, and later, having filled the usual residential posts at Guy's Hospital, he proceeded to the University of Aberdeen and graduated as M.B., C.M., with special honours, proceeding to the Doctorate of the University in 1873. In 1875 he became a Member of the Royal College of Physicians of London and pathologist to Guy's Hospital, being also appointed assistant physician to the Evelina Hospital. In 1877 he was appointed assistant physician to Guy's Hospital, being elected a Fellow of the Royal College of Physicians of London three years later. Among his teachers were Cock, Hilton, Habershon, Wilks, Pavy, and Bryant, and owing to his early success all of these now became his colleagues, together with Dr. Frederick Taylor, Pye-Smith, Howse, Mr. Golding-Bird, and Mr. Jacobson. He was already physician to the Evelina Hospital for Children as well as medical adviser to several public institutions when he was elected upon the staff of Guy's Hospital, so that it will be seen that Goodhart planted his foot firmly on the professional ladder while quite a young man. Indeed, the story of his professional life was one of continued success, his skill in diagnosis, his resourcefulness in treatment, and his candid attitude towards patients and professional colleagues alike proving recommendations to a very large circle of patients. A series of untimely deaths among his seniors helped to open the way for him to a position which he richly deserved, though he might not have so promptly obtained it. For many years he enjoyed a very large consulting practice without being connected in the minds of the public with any one particular specialty. His clinical work, indeed, ranged over a very wide field. He was first known for his connexion with the Evelina Hospital as an authority on the diseases of children. His next work to attract attention was pathological, and in connexion with the liver and spleen. He wrote, also, largely on respiratory and renal conditions, while his lectures delivered before the Harveian Society on Common Neuroses enjoyed a wide circulation in book form. The lectures were published in full in THE LANCET and appeared practically unaltered in the volume, where the strong good sense of their inspiration and the terse and vigorous language employed secured for their author instant popularity. And it may be said that in all the various departments of medicine in which he worked he displayed the same qualities of thoroughness, shrewdness, originality, and, when it was appropriate, considerable humour.

At the Royal College of Physicians of London he was Bradshaw lecturer in 1885 and Harveian orator in 1912, and the lectures of the man of 40 resemble the oration delivered 27 years later by revealing the same broad but keen intellect. The circumstances under which it fell to Goodhart's lot to deliver the Bradshaw lecture were peculiar. He was discharging the duty of his colleague, the late Dr. F. A. Mahomed, whose medical career was prematurely terminated in the previous autumn after appointment as Bradshaw lecturer, and Goodhart selected for his subject Morbid Arterial Tension, which happily embraced some of the best known work of Mahomed. He dealt with it from a widely philosophical view, but showed himself fortified with facts gained by a wide experience in the post-mortem room of Guy's Hospital, so that he was able to bring into clear relief the essential nature of the morbid processes. The lecture teemed with happy and homely illustrations; its language was pure and scholarly, and Goodhart's reputation was established among the leaders of his profession as a thinker, teacher, and practitioner. His Harveian oration delivered in 1912 had the eloquence and raciness that during the years which had elapsed he had taught the medical profession to

expect from him in his public utterances. The oration was a summary of the triumphs of pathology for the past 40 years, and the orator showed that as the necessary sequence of triumphs we must have modified valuations and even the disappearance from notice of things which throughout a whole previous decade might have appeared to be of the utmost importance. The rapid advance of pharmacology, resulting in the output of synthetic drugs, has enabled the scientific medical man to correlate with some exactness physiological action with structure, and Goodhart showed that the change of standpoint had been due almost entirely to the fact that biological science, of which medicine is a part, now follows the methods of physical science, directly questioning nature by experiment. The oration showed in a remarkable manner the mind of a busy man, able, while living the routine of a successful practitioner, to appreciate the relations of his particular work to science generally, and to assimilate the lessons of modern research.



SIR JAMES FREDERIC GOODHART, BART., M.D.

[*Reproduced from a photograph by Messrs. Russell & Sons.*

His literary output was not very great considering his prominent professional position, but his contributions to the medical journals were fairly numerous and always very good. In addition to his book "Common Neuroses" he wrote the "Diseases of Children" in collaboration with Dr. G. F. Still, which remains in its tenth edition a standard work, and he was the author of the articles on influenza and asthma in Allbutt and Rolleston's "System of Medicine."

He became full physician to Guy's Hospital in 1887, being appointed consulting physician in 1899, in which year the University of Aberdeen gave him the honorary LL.D. In 1911 he was created a baronet.

He married in 1879 Emma, daughter of Mr. William Bennett, of Ashgrove, who died last year, and is succeeded in the baronetcy by the elder of his two sons, Mr. Ernest Frederic Goodhart, who is now acting as the honorary secretary to Princess Mary's Sailors' and Soldiers' Fund.

A former pupil and colleague writes:—

The death of Sir James Goodhart will bring to a veritable host of professional friends a keen sense of personal loss. That so busy a practitioner, who throughout his life scarcely ever allowed himself any social relaxations, should have attracted and held such an army of devoted friends can only be explained by his strikingly sympathetic personality. Large numbers of medical practitioners who had for Goodhart the warmest affection have never seen him or spoken to him except in formal consultations over their patients. The personal magnetism which gave him such exceptional powers as a physician and brought to him so large a share of the consulting practice of this country attached to him his professional colleagues as firmly as his patients. One is almost tempted to believe that many consultations with Goodhart were arranged as much to afford the practitioner the pleasure of the personal interview with the consultant as to secure for the patient the benefit of his professional advice. There was never any doubt, however, but that the patient would be pleased and satisfied too. He would come away confident that the kindly physician had had a full understanding of the case and a proper sympathy with the sick man's own peculiar point of view. No wonder that so universally popular a physician should at one time have been the busiest medical consultant in London. It must not, however, be thought that in laying such stress on Goodhart's personal charm of manner and sympathetic disposition it is suggested that it was upon these alone that his professional success depended. At the moment when one is feeling acutely the pang of separation caused by death it is those features in our lost friend upon which we prefer to dwell. A busy general practitioner with an intimate practical experience of most of the prominent consultants said the other day, "What struck me most about Goodhart as a consultant was that he was always right." The present writer, who was in constant touch with him in his work at Guy's Hospital, can well believe this to be true. When every fatal case comes to examination in the post-mortem room, as is the custom in hospital practice, the physician's power of accurate diagnosis is put to a severe test. Goodhart, who in his younger days as demonstrator of morbid anatomy had

an exceptionally large experience of post-mortem work, had later on a high reputation amongst his hospital colleagues for accurately forecasting the pathological changes that would be found in the cases for which he had been responsible during life. In his Harveian oration at the Royal College of Physicians of London in 1912 Goodhart spoke regretfully of "The Passing of Morbid Anatomy." There is no doubt that he laid the foundations of his own diagnostic skill by his industrious work in the dead-house. The Transactions of the Pathological Society from 1872 to 1886 give evidence by the numerous contributions they contain from his pen of the interest he took in this subject. It was in pathology perhaps more than in clinical medicine that Goodhart made his mark as an original observer. The addresses and lectures on clinical subjects which he delivered before numerous medical associations and societies in more recent years attracted the attention of the profession more on account of their sound common-sense and the profound knowledge of human nature they displayed, than by reasons of the original clinical observations they contained. Perhaps in clinical medicine Goodhart never quite saw the wood for the trees. In dealing with the individual patient nothing escaped his attention, and as a teacher his most valuable work was undoubtedly done in setting an example to his pupils of thorough painstaking investigation by full inquiry as to every function and by physical examination of every accessible organ. Less experienced students, accustomed to the spoon-feeding which has, alas, become so prominent a feature of medical education, were bored by the prolonged investigations, of which they often failed to grasp the import and missed the didactic methods whereby others of their teachers helped them to pass their examinations. For advanced students and for men already some time in practice a visit to the ward with Goodhart was always an experience full of profit and interest.

In tackling a troublesome patient Goodhart was no doubt at his best with a cross baby. His experience as physician to the Evelina Hospital for Sick Children provided him with his only temptation to become a specialist. For himself he hated the term specialist, and used to warn his juniors of the danger he early recognised in accepting the position, when a mother told him how she had at first resisted her doctor's advice to call him to her baby because she understood he was a specialist for children between the ages of six and seven.

In his relations with his patients, as with his friends, Goodhart was a confirmed optimist, and managed to inspire nearly all whom he met with his own hope and cheerfulness of spirit. He worked right up to the end, and to the very last was busy brightening the lives of others. The death of his wife in February of last year was a very severe blow to him, and at about the time of the first anniversary of the sad event the early and insidious symptoms were noticed of the fatal illness to which he succumbed on Sunday morning, May 28th, at the age of 70.

JOHN HAROLD, M.B., B.CH. R.U.I., M.R.C.S., L.R.C.P. LOND.

Dr. John Harold, who died in London on May 27th after a long illness, was born and educated in Dublin and studied medicine at Charing Cross and University College Hospitals, qualifying in 1889. From an earnest student he became a capable teacher, patient and clear in his demonstrations, which were free from the taint of mere empiricism. He gained a varied experience at Charing Cross Hospital, where he was in succession demonstrator of physiology, materia medica, and pathology, and medical registrar, and at Westminster Hospital, where he was clinical assistant in the skin department. This experience served him in good stead in the literary work to which he devoted most of his time. He was a careful and an accurate writer, and besides contributing freely to journals was senior assistant editor of "Quain's Dictionary of Medicine," himself contributing articles on such widely differing subjects as Euthanasia, Coccygodynia, Diabetes Insipidus, and Glycuronic Acid, and was the London collaborator of "International Clinics." Latterly he was physician to the St. John and St. Elizabeth Hospital at St. John's Wood.

DEATH OF MR. ALFRED GRACE, M.R.C.S. ENG., L.S.A.—Alfred Grace, whose death occurred on May 24th, was the second son of Henry Mills Grace and a brother of the three famous cricketing brothers, "W. G.," "G. F.," and "E. M." He was himself a fair cricketer as a boy, and he was famous in the hunting field. He took the M.R.C.S. Eng. in 1863 and the L.S.A. in 1864, and practised for many years at Chipping Sodbury. He was a late Surgeon-Lieutenant-Colonel, Royal Gloucestershire Hussars Yeomanry Cavalry.

Correspondence.

"Audi alteram partem."

TUBERCULOSIS AND THE WAR.

To the Editor of THE LANCET.

SIR,—The annotation in your issue of May 20th regarding discharge from the services owing to tuberculosis has drawn attention to one aspect of a very complex problem. Tuberculosis carries in its train low wages, unemployment, and poverty, and is thereby associated with the realities of our future national life. It is in the highest interest of the nation that we should try to solve this problem without delay, for if the solution be delayed until our great armies return it may well be that Swinburne's paradox may come true: "The lame and the halt and the blind are keen and mighty and fleet." The control and eradication of tuberculosis is only to be achieved by a policy based on knowledge and foresight, and neither political expediency nor sentimentality can have any influence on the incidence of a disease. Moreover, there are at least three aspects of the question which must be settled on their own merits. The amount of a pension comes first, for it is clear that, with the purchasing power of a sovereign reduced to eleven shillings, pensions which were adequate in the Napoleonic wars must be considerably augmented; then there are the men to whom these pensions should be awarded; and lastly, there is the treatment of tuberculosis on national lines.

For the purpose of stating a definite policy it is necessary to regard the tuberculous patients discharged from the services as falling into one or other of four large categories.

I. There may be men, free from tuberculous infection when they joined, who became infected and developed active disease in the services. Such patients would be entitled to a full pension for life, since their disability would be wholly due to the conditions of service.

II. Secondly, there are men who never suffered from active tuberculosis in civil life but who had a focus of latent infection, which developed, under the strain of active service, into declared aggressive disease. It is idle to speculate as to whether the man would have continued to enjoy his accustomed health had he remained in safe and comfortable employment in civil life. The benefit of the doubt should go to the patient, who ought to be pensioned on the ground that his disability was aggravated by active service.

III. Again, we have the men, who had been treated prior to the war for pulmonary tuberculosis at tuberculosis dispensaries or at sanatoriums, who regarded themselves as cured in so far as they were fit to earn their livelihood in civil life, and who joined the services when the call came in the belief that they were able to serve the country. Many of them have withstood the strain of war in a way which clearly demonstrates how much may be done for individual cases by scientific treatment. Others have broken down and have been discharged as unfit for further service. These men signed the attestation certificate in perfect good faith, "I hereby certify that to the best of my belief I have never suffered from ..... any other disease likely to render me unfit for His Majesty's service." Again, they were allowed to serve after undergoing a medical examination, and they joined from motives which it is well to recall even in the middle no less than at the beginning of war. In my view these men have a right to claim that their relapse was aggravated by conditions of service.

IV. Lastly, there were men with active disease which had rendered them unfit for employment in civil life who succeeded in joining the services. One such recruit joined one branch of the services three times in 18 months and when seen by me had been twice discharged. For two years before the war he had done no regular work, and at the time of attestation his name was on the waiting list for admission to a sanatorium in the north of England. During his time in the service he only appeared for duty on three occasions and went "sick" each time. The remainder of his service was spent in hospitals. When I asked him why he had joined again after having been discharged, he replied with engaging frankness, "It's easier than working at the docks." I should add that this example is not intended to suggest any wholesale criticism of those civilian

doctors through whose hands these patients passed into the services. At the beginning of the war the numbers awaiting medical examination were large and the time for examination was limited. Moreover, the call for men was urgent and the total supply was limited. Many a doctor must have had in the back of his mind the idea of how many men he could pass rather than how many he could exclude in the interest of the country. However that may be, only a vain sentimentalist would suggest that cases in this last group are entitled to any pension from the State.

How, then, may we separate the wheat from the chaff? It has been suggested that the records of the compulsory notification of pulmonary tuberculosis in the hands of the public health authorities should be utilised for this purpose, the idea being that cases notified before the war should not be pensioned, while cases not notified would receive a pension. The objections to this plan are so grave that I hope it will never be seriously considered. A notification certificate is a private and confidential document, given on the understanding that no action based on the information granted will affect the patient, except such interference as is already sanctioned by law. The use of information given on that understanding, even if only passed from one Government department to another for the purpose of annulling an unjust claim, strikes at the basis of privileged confidence between patient and physician. That is a necessary privilege which our profession has always guarded with jealousy, for it is older than the civilisation in which we live.

There are other objections, not less serious, to the above proposal. It would be an absolute handicap on early and accurate diagnosis. In civil practice it is a commonplace that many patients do not seek advice until the disease is well advanced, so advanced, indeed, that very often little can be done in the matter of curative treatment. If the early recognition of pulmonary tuberculosis comes to be associated by large numbers of the community with the loss of financial recognition for services in the war it can only lead to further concealment and make-believe on the part of the ignorant. Again, this scheme would be most unjust to the men in Group III., who would be refused pensions without any inquiry into the particulars of their case. Lastly, there would be a number of previously undiagnosed cases in Group IV. to whom pensions would be granted.

I suggest that the Insurance Act provides for a method of deciding these claims, whereby individual injustice will be reduced to a minimum. The procedure is quite simple and straightforward. Let every man invalided from the services, who claims a pension on account of tuberculosis contracted or aggravated by the conditions of service, be asked to produce evidence from his approved society or from his insurance books, that for six months prior to attestation he was earning his living in civil life, or if unemployed, that he was not in receipt of sick benefit on account of tuberculosis. To all who satisfied this test, pensions for life might be granted with justice.—I am, Sir, yours faithfully,

May 22nd, 1916. HALLIDAY SUTHERLAND.

A NEW DRESSING FOR SKIN-GRAFTS.

To the Editor of THE LANCET.

SIR,—The method of grafting propounded by Thiersch has hitherto been in general use in cases where it is impossible to cover large surfaces of cuticle by means of additional cuts, strips, and seams. It is therefore frequently resorted to by the practical surgeon. Unfortunately, when it becomes necessary to cover more extensive granulated surfaces, such as those left after a burn, even modern aseptic methods do not always ensure success, and it is not unusual for suppuration to be set up under the dressing which destroys the vitality of the grafts and causes them to mortify. Such occurrences are all the more disappointing as the grafts are taken from a healthy part of the patient, who not only gains nothing by the unsuccessful grafting but remains with an additional surface wound to heal. Not only do the generally accepted methods of preparation of the wounded surface for grafting and the successful fixation of the particles of graft have an enormous influence on the success of the operation, but the scientific dressing of the wound after grafting is also of importance. The two essentials—(1) the proper fixation of the grafts, and (2) such perfect cleanliness of the wound surface as to prevent suppuration—constitute the extreme difficulty of the task, for it is almost impossible to remove the dressing without disturbing the grafts, and without doing so the absence of discharge cannot be determined. To prevent adhesion of the grafts to the dressing they have been protected by strips of silver-foil, gold-beater's skin, or other substances applied in overlapping layers, or in pieces perforated to allow of drainage. This method, although perfect for fixing the grafts, has the important disadvantage of encouraging the wounded surface to discharge, with consequent accumulation of pus under an impervious cover, thereby clogging the particles and preventing their growth. This I have found to account for most of my failures.

To prevent the accumulation of discharge under the protective dressing I decided, therefore, to use a coarse-meshed metallic netting to fix the grafts, and over that I placed a moist dressing of saline. Unfortunately, I was unable, owing to the war, to procure a suitable silver net, but I found that the ordinary large-meshed canvas supplied for ladies' woolwork answered all the requirements. To obtain the necessary elasticity and pliability and prevent the canvas from absorbing pus into its meshes, which might render the wounded surfaces septic, the canvas was starched and soaked in melted paraffin. The canvas thus treated was then rolled on a glass cylinder, wrapped in waxed paper, and sterilised, during which process the superfluous paraffin was absorbed and a firm, pliable, non-absorbent netting obtained, which proved an excellent covering for Thiersch's grafts. Pieces of skin were transplanted direct on to a granulated surface previously prepared by daily dressings. This dressing consisted of several layers of sterilised gauze soaked in saline, over which was placed dry wood-wool (lignine) bandaged on without either oilskin or waxed paper. On the wound when grafted is placed the net or canvas which on becoming warmed by the heat of the body at once adheres closely to the surface. The net should be larger than the wound and the edges securely strapped down with strips of adhesive plaster. Over this is then placed a dressing of gauze soaked in saline covered with lignine without either oilskin or waxed paper and securely bandaged. After two days the dressing, as far as the net can easily be removed as the gauze scarcely adheres to the canvas. Slightly moistening the dressing will help to remove it. The net remains in place for eight days, the dressing is changed daily, and the surface of the canvas cleansed from discharge with saline or hydrogen peroxide. On the eighth day the canvas is removed, when the grafts will be found firmly adherent and beginning to spread over the periphery. The certainty of success under these conditions is very great. Grafting by this method has been practised by me and my assistants in more than 20 wounds of more than a hands-breadth without losing a single graft. The encouraging results prompt me to publish these observations.

I am, Sir, yours faithfully,

A. N. HAGMANN,

Professor at the Moscow Women's Surgical College.

THE HEROES OF WITTENBERG.

To the Editor of THE LANCET.

SIR,—Many of us must feel deeply that some memorial should be put to the memory of the three brave doctors who died at Wittenberg Camp, of typhus, while doing their utmost to alleviate the terrible suffering and misery of which we have all read, with a thrill of horror, from the reports of Major Priestley, Captain Vidal, and Captain Lauder.

The King has voiced all our wishes by the honours he has graciously bestowed on these gallant men who mercifully survived, and we now feel that the names of those who died—Major W. B. Fry, Captain A. A. Sutcliffe, and Captain S. Field, all officers in the Royal Army Medical Corps—should be remembered in the years to come.

All will agree that, if possible, the memorial should take the form of helping to alleviate suffering and do some permanent good, but that must necessarily depend on the amount received.

I will gladly receive and acknowledge all contributions, however small, for I feel all men and women will wish to join in honouring the memory of such men.

I am, Sir, yours faithfully,

CONSTANCE PARKER OF WADDINGTON.

Aldworth, Haslemere, Surrey, May, 1916.

THE HORRORS OF WITTENBERG CAMP.

To the Editor of THE LANCET.

SIR,—When you were good enough to publish in your issue of April 22nd a letter from me upon the above subject my intention was to bring a resolution before the annual meeting of the Laryngological Section of the Royal Society of Medicine requesting the Council of the society to delete the names of all Corresponding Members of German birth from the roll of the section as an outward expression of disgust with the treatment, or rather lack of treatment, meted out to our helpless and fever-stricken prisoners of war at the hands of their professional confrères.

A resolution to this effect was sent by me to the honorary secretary of the section, but on submission to the President of the society was held by him to be *ultra vires*. I accordingly modified the original and sent a fresh resolution to the secretary of the Otological Section for discussion at the annual meeting on May 19th, couched in the following terms:—

That the members of the Otological Section of the Royal Society of Medicine desire to place on record their sense of abhorrence and disgust at the conduct of Oberstabsarzt Dr. Aschenbach and his colleagues in their abandonment of British prisoners of war during the epidemic of typhus fever at the Wittenberg Prisoners of War Camp, and request the Council of the Royal Society of Medicine to take such steps as they in their judgment may think fit to emphasise the feelings of indignation shared by members of the British medical profession.

This resolution was accepted as in order by the President of the Section, Dr. Albert Gray, of Glasgow, was proposed by myself, seconded by Mr. Richard Lake, and supported by Dr. Watson Williams. After a somewhat prolonged and pointless discussion the resolution was put to the meeting and lost, 9 members voting in its favour, 13 against.

The majority of the members present at the annual meeting of the Otological Section were therefore in favour of making *no protest whatever* against German barbarity to those typhus-stricken prisoners of war who, in their day of health and vigour, had done what lay in their power to defend our hearths and home. *Hinc illæ lachrymæ.*

I am, Sir, yours faithfully,

Manchester, May 28th, 1916. WILLIAM MILLIGAN.

CIRRHOSIS OF MESENTERY.

To the Editor of THE LANCET.

SIR,—I have had some difficulty in finding an apposite term with which to describe some conditions which I have encountered when operating in the abdomen of alcoholic and fatty subjects. The cases could be classified into: 1. Those in association with hepatic cirrhosis. I have from time to time observed remarkable tumefaction and induration of the great omentum, which at first glance suggested malignant infiltration, but in which the history, general condition, and absence of nodules, with the coexistence of a contracted liver, dispelled such a suspicion. On section only ordinary fibrous tissue formation was noted. In other words, what once was a delicate fatty apron had become converted into a diffused block of cirrhosed material. 2. Those displaying the ominous alcoholic girdle—a ring of dilated superficial veins over the lower thorax. In these I have often noted that when an attempt was made to ligate peritoneal adhesions the ligatures easily cut, or indeed broke, through, and in several instances I have had a similar experience with the meso-appendix prior to appendicectomy. Section invariably showed marked thickening with distinct fibrous changes. Furthermore, I have in these cases frequently met with distinct fibrous degeneration (cirrhosis) of the bowel wall, which readily broke away on insertion of sutures to cover in the appendical stump. 3. Those occurring in fatty persons, women and alcoholics in particular, in whom there was a history of ill-defined colicky pains, without any obvious organic lesions. This type of case has often caused me much diagnostic perplexity, and on abdominal exploration I have often found nothing to account for the symptoms except the partial conversion of large appendices epiploicæ into dragging masses of fibrous tissue. The size on section of the fibrous strands which permeate some of these lumps was noteworthy, and in some unquestionable victims of alcohol I have seen a complete cirrhotic transformation of these strands.

In many of these patients definite evidence of pericolitis was present—viz., extensive adhesions in the cæcal, ascending colon and sigmoid regions. In some there had been a definite history of spasmodic pain and discomfort, colitis, constipation, or gastritis. Separation of intestinal adhesions in alcoholic individuals is a futile procedure, as they always re-form. Although we are taught that fat stores up excess of alcohol, I am inclined to attribute this form of cirrhosis to microbic infection or to bacterial toxins passing from within outwards through the wall of the intestine by the lymphatics. The infection itself has been caused by prolonged irritation of the mucous membrane due to a liberal intake of alcohol, or in fat women to the fæcal accumulation in their sluggish colons. I have also observed this cirrhosis of the mesentery in conjunction with glycosuria, suggesting that the fatty tissue in the pancreas had become similarly infected and cirrhosed so as to interfere with the function of the islands of Langerhans.—I am, Sir, yours faithfully,

JOHN O'CONOR, M.A., M.D. T.C.D.,
Senior Medical Officer, British Hospital, Buenos Aires.

BOGUS MEDICAL DEGREES BILL FOR INDIA.

To the Editor of THE LANCET.

SIR,—With regard to your correspondent's reference to the Bogus Medical Degrees Bill for India that appeared in your issue of May 13th, Sir Pardey Lukis is quite right in his belief that a very large consensus of opinion is in favour of the principle of the Bill. The few criticisms are only made with regard to details. For instance, I can quite understand the attitude of the Bombay Medical Union which at its annual meeting held an open mind concerning the Government recognition of the Yunani (Mussalman) and Ayurvedic (Hindu) systems of medicine. While in India about two years ago I was much impressed with the good work carried on by many Ayurvedic physicians, some of whom are qualified men with medical diplomas from Indian Universities. The Ayurvedic colleges in India are training men in anatomy, physiology, pharmacy, and medicine, and are doing original work by translating Sanscrit medical works and reinterpreting them in the light of modern medical science. Any indigenous attempt to revitalise Indian medicine by European thought ought to be welcomed by all well-wishers of India. For it is only by this way that the millions of the Indian people will take kindly to Western medicine, and thus a lasting union between India and England be made. Therefore I sincerely hope that the work of the Ayurvedic colleges may find some recognition in the Bill now before the Indian Government.

I am, Sir, yours faithfully,

Wells, May 21st, 1916. C. MUTHU.

A MINOR SYMPTOM OF EXOPHTHALMIC GOITRE.

To the Editor of THE LANCET.

SIR,—I should like to draw attention to a peculiarity exhibited by some patients who are suffering from exophthalmic goitre—namely, a tendency to wash their hands with a frequency which is out of all proportion to the demands of ordinary cleanliness. The hyperidrosis of the hands, and especially of the palms, usually associated with the disease in question is, no doubt, responsible for this phenomenon in a certain number of cases, but, on the other hand, it has been found in well-marked cases of exophthalmic goitre in which excessive sweating of the palms did not appear to be present, and in which the patients themselves were entirely unconscious of its presence, and only complained, as far as their hands were concerned, of a feeling as if the latter were "always dirty." In cases of this type the tendency to wash the hands very frequently may be partly in the nature of a neurosis, and partly a result of chronic discomfort due to slight palmar hyperidrosis of which the patient is not actively conscious.

The interest attaching to this symptom lies in the fact that it sometimes appears in comparatively early cases; in one case of well-marked exophthalmic goitre it was found upon inquiry that a desire to wash the hands very frequently constituted one of the first departures from the normal which the patient had noticed. The writer has found the symptom in question present to a greater or lesser degree in seven undoubted cases of exophthalmic goitre—all in women—and also in a woman suffering from nodular headache who

had a slightly enlarged thyroid gland, unassociated, however, with any further symptoms of exophthalmic goitre.

I am, Sir, yours faithfully,

RICHARD J. CYRIAX, M.R.C.S., L.R.C.P.

Welbeck-street, W., May 22nd, 1916.

THE RESPONSIBILITY OF MEDICAL OFFICERS IN CHARGE OF PRISONERS.

To the Editor of THE LANCET.

SIR,—I, like many other officers of the Royal Army Medical Corps, have lately been in charge of prisoners, and I suggest that THE LANCET would do well to instruct us in our duties. The questions involved are important, and one's ordinary superiors appear to have no definite conception of the ethical and juridical principles involved. Let me state the problem.

1. One is dealing with a lot of men and women, not subject to military law, not convicted of any crime, and of whom the highest authority has stated that some are innocent and arrested by mistake.

2. The medical officer would presumably be held primarily responsible for any hurt which any of these prisoners suffered in health from insanitary surroundings, overcrowding, defects of food or clothing, &c., consequent on their confinement.

3. How far the operations of martial law would protect him from subsequent civil action seems doubtful. Certainly he could be called on to justify his actions.

4. Is there an implied responsibility, arising out of the office of physician to the prisoners, to ascertain that each one of them is fit for detention or for transportation?

5. If a prisoner be decided by the authorities to have been improperly arrested, and an order for his discharge be made, but meanwhile he dies as a result of the insanitary conditions of his place of detention or of the voyage of transportation, can the medical officer be held civilly responsible?

6. In such a case as above where the person, who dies on the journey or loses his mind during detention, is not a person subject to military law, if the medical officer be charged in the civil court, is it any answer to say that his official superior did not think the patient unfit for the journey or the place overcrowded or insanitary?

7. The point at issue is, How can the medical officer reconcile his responsibility to the patient who is not under military law with obedience to his military superior?

I am, Sir, yours faithfully,

Dublin, May 25th, 1916. LIEUTENANT, R.A.M.C.

*** Our correspondent will find, we believe, that no military orders will compel him to do violence to his ethical conceptions.—ED. L.

Hospital Saturday was observed at Portsmouth on May 27th, when £625 11*s.* 6*d.* were collected for the hospital and other local medical charities. Since the inauguration of this Fund in 1876 the sum of £29,986 has been received from this source.

CONFERENCE ON SANITARY ADMINISTRATION UNDER WAR CONDITIONS.—At the Royal Sanitary Institute, 90, Buckingham Palace-road, S.W., a conference on the above subject will take place on Friday and Saturday next, June 9th and 10th. The conference will be opened by the Lord Mayor of London, and at the morning session of the first day Mr. H. Percy Boulnois, M.Inst.C.E., and Dr. James Wheatley, medical officer of health to the Shropshire County Council, will open a discussion on the Maintenance of the Standard of Municipal Sanitation during the Continuance of War Conditions, the Mayor of Westminster presiding. At the morning session of the second day Dr. A. B. Ritchie, medical officer to the Manchester Education Committee, will open a discussion on the Administration of the Mental Deficiency Act from the Social and Educational Standpoint, Mr. Leslie Scott, K.C., M.P., presiding. The afternoon sessions will be devoted to visits to various municipal and commercial institutions, as well as to the King George Hospital and King's College Hospital. No charge will be made for the Conference ticket, but a fee of 5*s.* will be asked for proofs of the papers opening the discussions, together with the subsequent report of the proceedings. For further particulars application should be made to the secretary at the Institute.

The War.

THE CASUALTY LIST.

THE following names of medical officers appear among the casualties announced since our last issue:—

Killed.

Captain D. Waterston, Canadian A.M.C., attached to the Canadian Infantry, received his medical education at McGill University, Montreal, and qualified in 1914.

Lieutenant-Colonial G. O. Moorhead, Commanding Officer, Nyasaland Contingent, Union Expeditionary Force, was a medical man in practice in Central Africa, which he gave up on the outbreak of war and joined the Union Defence Force as a combatant officer, having previously seen service in the South African War.

Died.

Lieutenant H. J. S. Kimbell, R.A.M.C., was a student of St. Bartholomew's Hospital, London, and qualified in 1907. He held appointments at the West End Hospital for Nervous Diseases, the Hospital for Women, Soho, the City of London Lying-in Hospital, and the Bedford County Hospital, and was recently in charge of the Preston Hall Hospital, Maidstone. He joined the R.A.M.C. in August, 1915.

Wounded.

Captain J. H. Aikman, R.A.M.C.
Captain G. A. E. Argo, R.A.M.C.

Previously reported Missing, now reported Prisoners.

Lieutenant J. Brown, R.A.M.C.
Captain W. R. O'Farrell, R.A.M.C.

DEATHS AMONG THE SONS OF MEDICAL MEN.

The following sons of medical men must be added to our lists of those who have fallen during the war:—

Lieutenant-Colonel G. O. Moorhead, Union Expeditionary Force, eldest son of the late Brigade-Surgeon G. A. Moorhead.

Second Lieutenant C. C. Howard, only son of Dr. J. A. Howard, of Upper Norwood.

Lieutenant G. D. Grune, Royal Field Artillery, attached to the Royal Flying Corps, son of Captain E. Grune, R.A.M.C., of Southwick, Sussex.

THE HONOURS LIST.

The following awards to medical officers for gallantry and devotion to duty in the field are announced:—

Distinguished Service Order.

Temporary Captain Thomas Lewis Ingram, R.A.M.C. (attached 1st Battalion Shropshire Light Infantry).

For conspicuous gallantry and devotion to duty. He collected and attended to the wounded under very heavy fire, and set a splendid example. Since the commencement of the war he has been conspicuous on all occasions for his personal bravery.

Military Cross.

Captain James Couper Brash, 10th Field Ambulance, R.A.M.C. (Special Reserve).

For conspicuous gallantry and devotion to duty. He went to an artillery dug-out which had received a direct hit, and, assisted by two men, extricated the wounded and administered first aid under heavy shell fire.

Captain Henry Percival Hart, R.A.M.C.

For conspicuous gallantry and devotion to duty when, although himself wounded, he went out, dressed, and brought into safety the wounded under heavy shell fire.

Temporary Captain Philip Randal Woodhouse, R.A.M.C. (attached 1st Battalion Irish Guards).

For conspicuous gallantry and devotion to duty. He tended the wounded under heavy shell fire, and, though himself wounded, continued his work. On another occasion he went across the open under shell fire to attend to the wounded.

Temporary Lieutenant William John Knight, 73rd Field Ambulance, R.A.M.C.

For conspicuous gallantry and devotion to duty when in charge of an advanced dressing station under heavy shell fire. He continued to attend the wounded with great coolness.

MENTIONED IN DESPATCHES.

In a despatch from General Sir Douglas Haig, G.C.B., dated May 19th, dealing with recent operations of the British Army in France, the following references to the medical services and to chemical research are made :—

All branches of the medical services deserve the highest commendation for the successful work done by them, both at the front and on the lines of communication. The sick-rate has been consistently low, there has been no serious epidemic, and enteric fever, the bane of armies in the past, has almost completely disappeared owing to preventive measures energetically carried out. The results of exposure incidental to trench warfare during the winter months were to a very great extent kept in check by careful application of the precautions recommended and taught by regimental medical officers. The wounded have been promptly and efficiently dealt with, and their evacuation to the base has been rapidly accomplished. The close coöperation which has existed between the officers of the regular medical service of the army and those members of the civil medical profession who have patriotically given their valuable services to the army, has largely contributed to the prevention of disease and to the successful treatment and comfort of the sick and wounded. As part of the medical services, the Canadian Army Medical Corps has displayed marked efficiency and devotion to duty.

The valuable nature of the work performed by the officers of the Central Laboratory and the chemical advisers with the armies in investigations into the nature of the gases and other new substances used in hostile attacks, and in devising and perfecting means of protecting our troops against them, is deserving of recognition. The efforts of these officers materially contributed to the failure of the Germans in their attack of 19th December, 1915, as well as in the various gas attacks since made.

In despatches from Brigadier-General Barnardiston, M.V.O., dated October and November, 1914, but published only this week, dealing with the operations, in conjunction with the Japanese army and navy, against the German colony of Tsingtau (Kiao-chau), the names of the following medical officers are mentioned as deserving of special notice for their services:—

Fleet-Surgeon Clarke. | Major J. A. Hartigan, R.A.M.C.
Captain G. H. Dive, R.A.M.C.

In despatches from Major-General Sir C. Dobell and from General Cunliffe, dealing with the operations of the Cameroon Expedition, the names of the following medical officers are mentioned :—

Major E. B. Booth, D.S.O., R.A.M.C.
Captain T. M. R. Leonard, West African Medical Staff.
Lieutenant-Colonel J. C. B. Statham, C.M.G., R.A.M.C.
West African Medical Staff: J. C. M. Bailey, W. S. Clark, W. E. S. Digby, W. H. Peacock, T. H. Suffern, C. E. S. Watson, and R. F. Williams.

CENTRAL MEDICAL WAR COMMITTEE.

A meeting of the Central Medical War Committee was held on May 31st, when the position of medical men in relation to the Military Service Acts was fully considered. The official recognition of the Committee and of the Committee of Reference of the English Royal Colleges, and the Scottish Medical Service Emergency Committee was pointed out, this position having been brought about by the assistance of four great departments, the Royal Army Medical Corps, the General Medical Council, the Local Government Board, and the National Insurance Commission. The task now before the Central Medical War Committee is to enumerate and classify all the medical men concerned, under the Military Acts, the age-limit here being 41, or under the enrolment scheme, where the age-limit is 45. In this task and the work which follows the Committee will receive expert legal and clerical assistance from the National Insurance Commission.

WORK AT A FIELD AMBULANCE.

Lieutenant-Colonel G. J. Stoney Archer, R.A.M.C., who has been in charge of field ambulances in Gallipoli and in France since the outbreak of war, sends the following scheme of duties devolving upon the personnel of the ambulance when a batch of wounded is expected or arrives.

For the purposes of the scheme it is assumed that the tent subdivision of B and the section bearers of A and B are at the advanced dressing station, and the tent subdivision of A is open at headquarters, with tent and bearer subdivisions of C assisting and in reserve, as this will probably be the best distribution of the field ambulance when in action. The following is the scheme :—

Distribution of Sections.

1. *Dispenser.*—(*a*) The dispenser, Sergeant M——, under Captain P——'s instructions, will have dressings, instruments, &c., sterilised and ready. (*b*) He will have a solution of morphia (hypodermic) available in two small bottles of convenient size, also antitetanic serum and syringe for same, also strychnine, pituitary extract, chloroform, Skinner's mask, &c.

2. *Cook.*—The cook will have plenty of boiling water ready for making lotions, tea, milk, or bovril, &c. Lieutenant and Quartermaster H—— will supply him with necessary stores.

3. *Sergeant-Major.*—(*a*) The Sergeant-Major will inform all the medical officers, who will at once come to the receiving-room and be available for duty. (*b*) He will at once parade all available N.C.O.'s and men at headquarters, with the exception of the clerks and sanitary squad. The bearers will fall in with their slings (see note (4) on the scheme). (*c*) The Sergeant-Major will superintend the bearers bringing in or taking out cases to the motor ambulance convoy. (*d*) He will detail two or more orderlies, whose sole duty will be to go round continuously to every wounded man and ask him if he would like a drink of water, tea, bovril, or milk, or a cigarette, and to give him what he asks for unless there are two red lines drawn across the label on his coat (see para. 4 *c*.). The orderlies will also ask each wounded man if they can do anything to make him more comfortable, such as arranging a stretcher pillow or coat under his head or other part of his body as required. They will at once report to a medical officer if any man seems to require morphia owing to being in pain. They will also see that those who are cold get hot-water bottles, sufficient blankets, &c. (*e*) The Sergeant-Major will see that the nursing orderlies are in their wards, and assisted by other men brought in from the bearers. (*f*) He will detail an orderly to be attached to each medical officer as his personal assistant.

4. *Officers.*—(*a*) The officers present would be Lieutenant-Colonel A——, Captain P——, and Lieutenant and Quartermaster H—— (A Section), and Captain S ——, Lieutenant M——, and Lieutenant H—— (C Section). (*b*) Lieutenant H—— and Lieutenant M—— will be at Captain P——'s disposal and assist him with the dressings, &c. (*c*) Captain S—— will see each case as it arrives, and arrange that each wounded man is inspected at once. He will select those who require immediate attention, and will mark them by drawing one red pencil line across the label on their coat. Any case which is not to have liquid or food of any sort by the mouth (e.g., perforating intestinal wounds, &c.) will have two red lines drawn across their label with a red pencil (as a cheque is crossed). (*d*) Chest, abdominal, moribund, and slight cases will be arranged systematically in separate places as far as possible. (*e*) Lung cases, *after* they have been dressed, will have a blue bandage tied on a conspicuous part of their clothes, abdominal cases a red bandage, and all other cases a white bandage. (*f*) Cases that a medical officer dresses and considers will probably not require dressing again that day should have this recorded on their tally, in addition to the usual instructions which are put on the tally, such as amount of morphia given, antitetanic inoculation, &c. (*g*) Lieutenant and Quartermaster H —— will superintend the pack-storekeeper's work and be responsible that a plentiful supply of dressings is available.

5. *Admission and Discharge Sergeant.*—(*a*) The admission and discharge sergeant will keep on charge two red pencils for use as mentioned in para. 4 (*c*), 100 cigarettes for issue to patients (para. 3 (*d*)), and 100 red, 100 blue, and 300 white bandages, about a foot long, for use as mentioned in para. 4 (*c*). (*b*) The admission and discharge sergeant of C Section will be present with his book, and assist if many cases come in quickly. (*c*) Each clerk will have in his possession 100 Army Forms W. 3210 pinned together and be supplied with pins for pinning same on to patients' tunics.

6. *Packstore.*—(*a*) The packstore-keeper of C Section will assist if required in packstore work. (*b*) A reliable N.C.O. (working with the packstore-keeper) will be detailed to check and verify the personal kit and equipment of officers on admission or transfer, or on discharge.

The N.C.O. detailed will take particular care to inspect and note whether field-glasses and revolvers are contained in their cases, and will carry out instructions laid down in Circular D.G.M.S. No 26/2,105/15 where it applies, that is in case of death or where an officer is unconscious and has no servant in charge of his kit, &c.

7. *Distribution of personnel.*—Dispensers: Sergeant M—— (A Section), assisted by Sergeant B —— (B Section). Dispenser's orderlies: Private D—— and Private O——. Officers' orderlies: To Lieutenant-Colonel A——, Lance-Corporal N——; to Captain S——, Private L——; to Captain P——, Private A——, to Lieutenant M ——, Private C——, to Lieutenant H——, Private B——. Orderlies to attend to wounded *waiting* to be dressed: Privates C—— and C——. Orderlies to attend to wounded after being dressed and removal: Privates B—— and H——.

Notes on Above Scheme.

1. The above scheme will be carried out without notice by labelling bearers of C Section with supposed serious injuries, and the C.O. expects that when he gives a signal for this to be done officers and other ranks will fall into their place and carry out the above duties automatically. 2. For the information of all concerned a copy of this scheme will be posted up in the orderly room, the admission room, and in a convenient place where all ranks can see it. 3. The officers, N.C.O.'s, and men above mentioned will, of course, vary from time to time, depending on the officers, N.C.O.'s, and men who may be absent at the advanced dressing station, &c., but this will not in any way interfere with the general working of the scheme, the commanding officer making the necessary alteration in actual personnel immediately the occasion arises. 4. A stretcher sling has now been given to each stretcher-bearer in this field ambulance; it is marked with his number and name, and he is responsible for it as part of his equipment. When the slings were left with the stretchers it was found that they were being continually lost and not available when required. This plan has a further advantage that the bearer always has a sling fitted and padded to his own size and liking. 5. The commanding officer will hold all ranks responsible for being thoroughly acquainted with the above scheme.

CRAIGLEITH HOSPITAL CHRONICLE.—Our contemporary the *Craigleith Hospital Chronicle*, the profits of which are devoted to extra comforts for the sick and wounded, has among its May–June contents an interesting illustrated account of Easter in Russia by Jean d'Auvergne and a short history of the Regalia of Scotland. The reproduction of a portrait of Surgeon-General J. C. Culling, the new D.D.M.S. of the Scottish Command, forms a frontispiece. Copies of the magazine can be obtained from the 2nd Scottish General Hospital, Craigleith, Edinburgh, price 6*d*.

KEIGHLEY BASE HOSPITAL.—The new military base hospital at Morton Banks, Keighley, Yorkshire, which will afford accommodation for about 400 cases, will be opened in four or five weeks' time. Owing to the energetic action of the Mayor of Keighley, £10,200 have been collected in little over a month, a sum which will cover the cost of converting the fever hospital and adding other buildings which will constitute the new military structure.

BATHS FOR EAU COURANTE TREATMENT AT BRIGHTON.—Baths for this treatment of injuries of the arm and leg have been installed in connexion with the Red Cross Auxiliary Hospitals for Officers at Brighton. The apparatus installation is the generous gift of H.R.H. the Princess Royal.

MEDICAL MEN AND WAR SERVICE.—A meeting of medical men was recently held at Plymouth, about 30 being present, the majority of whom enrolled for military service.

PRIZE ESSAY ON MATERNITY AND CHILD WELFARE.—The Royal Sanitary Institute is offering a medal and a prize of £50 for the best thesis on a scheme for maternity and child welfare work suitable for adoption by local authorities. The conditions may be obtained from the Secretary, 90, Buckingham Palace-road, London, S.W.

Medical News.

UNIVERSITY OF LONDON.—At the Third (M.B., B.S.) Examination for medical degrees held recently the following candidates were successful:—

Louis Abel Celestin, University College Hospital; William Maurice Crombie, St. Thomas's Hospital; Christopher Ignatius de Silva, University College Hospital; John Alfred Wylde Ebden, Westminster Hospital; David Sydney Graves, Guy's Hospital; Innes Hope Pearse, London (Royal Free Hospital) School of Medicine for Women; *†Leonard George Phillips, B.Sc., Middlesex Hospital; Lloyd Desbat Phillips, University College Hospital; Emma Christine Pillman, London (Royal Free Hospital) School of Medicine for Women; Arthur Lisle Punch, Guy's Hospital; Leslie Norman Reece, St. Thomas's Hospital; *†‡Stanley Ritson, B.Sc. (University Medal), King's College Hospital; Douglas George Clutsam Tasker, University of Bristol; James William Tudor Thomas, Middlesex Hospital and University College, Cardiff; Arthur Henry Turner, University of Liverpool; Sibyl Ibbetson Welsh, London (Royal Free Hospital) School of Medicine for Women; and Arthur Wai-tak Woo, London Hospital.

* Distinguished in Medicine. † Distinguished in Surgery.
‡ Distinguished in Midwifery and Diseases of Women.

The following candidates have passed in one of the two groups of subjects:—

Group I.—Grace Mary Griffith, University College, Cardiff, and University of Leeds; Cyril Eaton Petley and Basil Sampson, Guy's Hospital; Alfred George Simmins, Guy's and Westminster Hospitals; and Eric Clarence Spaar, B.A., Ceylon Medical College and St. Bartholomew's Hospital.

Group II.—Arthur Wilfrid Adams, University of Bristol; Frederic Vivian Bevan-Brown, Guy's Hospital; Robert Malcolm Dannatt, St. Bartholomew's Hospital; Walter Henry Lloyd, Middlesex Hospital; and Violet Ione Russell, London (Royal Free Hospital) School of Medicine for Women.

N.B.—This list, published for the convenience of candidates, is issued subject to its approval by the Senate.

THE annual general meeting of supporters of the South London Hospital for Women, Clapham Common, S.W., will be held at 16, Carlton House-terrace, S.W., by permission of Lady Cowdray, on Thursday next, June 8th, at 3.15 P.M., the Marchioness of Londonderry presiding. Lady Frances Balfour, Sir Frederick Treves, and Mr. Pett Ridge are announced to speak.

CHADWICK LECTURES ON MEASLES.—The first of the two Chadwick lectures on measles, delivered by Dr. H. J. Cates, medical officer of health of St. Helens, Lancs., was presided over by Sir William J. Collins, chairman of the Chadwick Trustees. Sir William Collins stated that in London during the period 1905–09 measles killed more children than all the ordinary notifiable diseases put together. Nearly all the deaths from measles were of children under the age of 5 years. In the case of measles, unlike other notifiable diseases, notification could not be directed to stamping out the disease altogether nor to the removal of most of the cases to hospital. Home nursing therefore became all-important, although it might well be supplemented by voluntary hospital provision. Insanitation was mainly responsible for the high fatality in certain places and at certain times. The deadly epidemic in the Fiji Islands in 1874 was due, not as was often said to the disease attacking a virgin soil, but to the gross neglect of the sick and want of ordinary care and nourishment. At the present time we ought not to relax ordinary sanitation and leave refuse undealt with and streets unwatered or we should pay the penalty of epidemic disease and high infant mortality. Dr. Cates dealt with the history of the disease, describing how epidemics of measles in the past had destroyed nearly a quarter of the population of a district. In England and Wales 10,000 children died from the disease every year, and at least an equal number were left permanently disabled. Since the commencement of war there had been serious outbreaks of measles amongst the troops in several areas. The occurrence of an epidemic could be foretold with almost mathematical certainty, and there was therefore little excuse for sanitary authorities to allow an outbreak to find them unprepared. In clean homes and in good surroundings healthy children rarely failed to make a good recovery; on the other hand, the death-rate from measles among infants of unskilled labourers was nearly four times as great as that of children of the upper and middle classes. The main cause of death in measles was infection set up by an unhealthy condition of the mouth, nose, and throat. A child whose playground was the unswept street, whose idea of hide-and-seek was confined to a romp in an alley in which filth and garbage was lying, whose voyage of discovery was limited to a search for cigarette cards among the contents of ashpits, was unlikely to possess a healthy nose and throat. Dr. Cates appealed for the general extension of treatment to children under school age, and urged that the plea of economy should not be allowed to jeopardise the health of the nation.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

The Military Service Act.

THE Military Service Act which introduces compulsory military service for all male British subjects ordinarily resident in Great Britain between the ages of 18 and 41 has received the Royal assent. It embodies a scheme of professional committees to deal with exemptions which may be granted to medical men.

Highlands and Islands Medical Service Board.

The report of the Highlands and Islands Medical Service Board for the year 1915 has been presented to Parliament and issued as a Blue-book. It states that, as indicated in their first report, the Board had in contemplation the constitution of committees for the local administration of grants from the fund, in the various districts in their area, composed of representatives of all the public bodies on whom Parliament had placed responsibility for dealing with matters affecting the health of the individual or of the community. A scheme providing for the election of the committees, and setting forth the powers and duties to be entrusted to them, was placed before the Secretary for Scotland for his consideration in July, 1914. A further scheme for a first allocation of the fund, based on the actual needs of the various districts, as ascertained by close scrutiny and sifting of the local proposals, by such advice as the Board had been able to obtain from all available sources, and by conference with representatives of the various interests in each district, was submitted for approval early in November, 1914. In view, however, of difficulties felt by the Secretary for Scotland and the Treasury as to the expediency of setting up new local bodies for the special purpose of the administration of the fund, the Board agreed, after they had placed their views fully before the Secretary for Scotland, to undertake the direct administration of their grants, utilising the assistance of existing local authorities and other bodies in any way that might be found to be desirable. The decision to dispense with local administrative committees necessitated the revision of the schemes already submitted and the preparation of more detailed schemes dealing with the various aspects of the Board's work. Fresh proposals were placed before the Secretary for Scotland in April, 1915. The schemes, as finally approved on August 11th, 1915, are given in the report. The Board express their indebtedness to the Scotch Education Department for permitting Dr. CRUICKSHANK, their medical officer, to take part in the work of organising the Board's schemes, and also to the naval authorities for their kindness in arranging for the conveyance of nurses and medical stores to and from outlying islands where the ordinary means of communication are at at present in abeyance.

HOUSE OF COMMONS.

WEDNESDAY, MAY 24TH.

Medical Examinations in the Army.

Mr. ASHLEY asked the Under Secretary for War why it had been decided to increase the number of men medically unfit in the army by suspending the check of examination by regimental medical officers when men joined second-line units; how long must a man have been in training before the regimental medical officer was allowed to examine him except for infectious disease; and when a man broke down under training and was sent to hospital might medical examination then take place.—Mr. TENNANT answered: There is no limitation to the examination of soldiers by their regimental medical officers when it is necessary in the interests of the men's health.

Mr. ASHLEY: Can recruits on joining be examined by the medical officers of the units?—Mr. TENNANT: Yes, when it is considered necessary.

Medically Rejected Men.

Answering Mr. HOGGE, who put a question regarding men who had been medically rejected for the army, Mr. TENNANT said: The following classes of men will not be summoned for re-examination medically: (*a*) Those who are recorded in the military register as having been rejected at the primary military examination; (*b*) those who are recorded in the military register as having been rejected by a medical board; (*c*) those who now willingly present themselves for re-examination medically and are found by a medical board to be unfit for any service; (*d*) those concerning whom the recruiting officer is satisfied that there is no possible doubt. The aim of the Army Council is to eliminate only the improperly "rejected" men—that is, men holding certificates which have been granted to others than themselves and transferred to them, and men holding certificates saying they were unfit because of some transient and now long past disability.

British Prisoners of War in Germany.

Mr. TENNANT, replying to Major WHELER, stated that he found that the authorised scale of rations for British prisoners in Germany was in practice disregarded with serious consequences to the prisoners. He was advised that if it had not been for the parcels of food sent to the men from this country they would in many instances have starved. Therefore he did not think that there should be any relaxation of the efforts which had been made, and were being made, to send relief to the prisoners.

The Steel Helmets for the Troops.

Mr. TENNANT informed Mr. JOYNSON-HICKS that the French steel helmet was made in three sizes. The English steel helmet was also made in three sizes.

THURSDAY, MAY 25TH.

Internment of Invalid Prisoners in Switzerland.

Mr. MALCOLM asked the Secretary for Foreign Affairs when he expected to be able to fulfil his promise to publish and circulate the agreement under which invalid German and British prisoners of war would be sent to Switzerland and also the categories of diseases that would qualify prisoners for this transfer.—Sir EDWARD GREY replied: We hope to lay before Parliament the correspondence constituting the agreement very shortly.

Mr. MALCOLM also asked the right honourable gentleman whether the arrangements now arrived at between Great Britain and Germany for the internment in Switzerland of invalid prisoners of war were applicable alike to civilian and military prisoners.—Sir EDWARD GREY answered: The question of the inclusion of civilians in the arrangement arrived at between Great Britain and Germany for the internment in Switzerland of invalid prisoners of war is under consideration. We already have an agreement with Germany for the repatriation of invalid civilians.

Recruiting Medical Board at Ipswich.

Replying to Sir EDWARD BEAUCHAMP, Mr. TENNANT said: Arrangements have been made for a recruiting medical board to assemble at Ipswich and to commence work there on May 29th. It will sit daily on and after that date.

Incapacitated Prisoners of War in Turkey.

Captain CHARLES BATHURST asked the Under Secretary for War whether, in conformity with the practice adopted at Kut of exchanging sick and disabled prisoners belonging, respectively, to the British and Turkish armies, arrangements could be made for releasing by way of exchange disabled prisoners belonging to the Dorset Yeomanry and now in the hands of the Turks in Constantinople.—Mr. TENNANT answered: An agreement has been reached with the Turkish Government for the reciprocal repatriation of incapacitated prisoners of war under the same conditions as have been in operation for over a year between this country and Germany, and it is hoped that this may be put into effect shortly.

MONDAY, MAY 29TH.

Sanitary Accommodation in Dublin Prisons.

Mr. DEVLIN asked the Prime Minister whether he would lay upon the table of the House of Commons the reports of the medical officers regarding the sanitary accommodation provided for, and treatment of, prisoners awaiting trial in the various prisons and hospitals under the military authorities in Dublin.—Mr. HERBERT SAMUEL (Home Secretary) replied: The Prime Minister does not think it desirable to publish these reports, and his own experience of Ireland leads him to think that the sanitary accommodation of the prisoners is satisfactory.

Steel Helmets and Head Wounds.

Mr. ANNAN BRYCE asked the Under Secretary for War whether steel helmets had now been provided for all the troops on the Western front; and, if not, whether instructions would be given that when troops leave the trenches they shall leave the helmets for the incoming troops.—Mr. TENNANT answered: The supply of steel helmets has very nearly reached the number asked for up to the present, and it is believed that sufficient has been issued for the needs of all British troops within the zone of shell fire in France. As regards the latter part of the question, I think we may very safely leave the issue of such instructions to the general officer commanding in chief, in whom we all have the highest confidence, rather than attempt to dictate to him from this House on matters obviously within his purview.

Mr. ANNAN BRYCE also asked whether the use of steel helmets had diminished, and, if so, to what extent, the percentage of head wounds in British hospitals, which about six months ago were 15 per cent.—Mr. TENNANT said in reply: The percentage of head wounds to the total wounds in British hospitals in France from Feb. 12th, 1916, to May 15th, 1916, is 12·35.

TUESDAY, MAY 30TH.

The Medical Arrangements in Mesopotamia.

Colonel YATE asked the Secretary for India when the report on the breakdown in the medical arrangements in

Mesopotamia would be published; and whether the report would say who were the medical officers or other authorities in India responsible for the shortage of medical supplies.—Mr. CHAMBERLAIN replied: The Commission has not concluded its inquiry, and I am unable to give any date for the submission of the report. The terms of reference require the Commission to ascertain and assign the responsibility of individual officers for any inadequacy or failure of relief or shortage of personnel, equipment, vehicles, or stores.

Watering London Streets.

Sir STEPHEN COLLINS asked the President of the Local Government Board whether his attention had been called to the condition of many of the streets of London owing to the resolve of the various local authorities to discontinue the watering of the streets; whether he was aware that this neglect of a sanitary regulation was a peril to the health of the community, especially during the summer months, when sometimes dense clouds of impure matter were blown about and inhaled by pedestrians and wafted into open windows; and would he take the necessary steps to impress upon local authorities the importance of finding some means to carry out the duty of watering and purifying the public thoroughfares.—Mr. HAYES FISHER (on behalf of Mr. LONG) answered: My right honourable friend has made some inquiry into this matter, but has not learnt that any metropolitan borough council has discontinued street watering. In some cases street watering has been reduced from reasons of economy, and in more cases still from the difficulty in getting labour. My right honourable friend has already made a statement of his opinion on the policy of reducing street watering.

WEDNESDAY, MAY 31ST.

Petrol for Medical Men.

Replying to Sir THOMAS ESMONDE, Mr. PRETYMAN (Parliamentary Secretary to the Board of Trade) wrote: The needs of medical practitioners are being borne in mind by the committee appointed by the Board of Trade for the purpose of considering the supply and distribution of petrol, and it is hoped that steps towards meeting the requirements of medical men generally as regards petrol may shortly be possible.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

BARCLAY, J. B., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Lydbrook District of the county of Gloucester.

ESTERMAN, T., M.B., Ch.B. St. And., House Surgeon at Leicester Royal Infirmary.

FORSYTH, R. A., M.D. Glasg., Medical Officer to the Munitions Tribunal for the Bradford District, which includes Bradford, Skipton, Shipley, Otley, and Keighley.

HEDDEN, R., L.R.C.P. Lond., M.R.C.S., Certifying Surgeon under the Factory and Workshop Acts for the Honiton District of the county of Devon.

HOLLAND, EARDLEY, M.D. Lond., F.R.C.S. Eng., Assistant Obstetric Physician to the London Hospital.

PORTER, AGNES ELLEN, M.D., D.P.H. Edin., Assistant Medical Officer to Govan Combination Hospital, Merryflatts.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).
When the application of a Belgian medical man would be considered the advertisers are requested to communicate with the Editor.

ALL SAINTS' HOSPITAL FOR GENITO-URINARY DISEASES, Victoria, London, S.W.—Non-resident House Surgeon, chiefly for afternoon work. Salary £100 per annum.

BELFAST MUNICIPAL SANATORIUM, Whiteabbey.—Temporary Assistant Resident Medical Officer for six months. Salary £5 5s. a week, with board, &c.

BOURNEMOUTH, ROYAL VICTORIA AND WEST HANTS HOSPITAL.—House Surgeon for six months. Salary £150 per annum and extras, with board, &c.

BRADFORD, CITY OF.—Two Temporary Female Medical Officers. Salary 8 guineas per week.

BURY INFIRMARY.—Junior House Surgeon. Salary £150 per annum, with board, &c.

CHELSEA HOSPITAL FOR WOMEN Fulham-road, S.W.—House Surgeon, unmarried. Salary £80 per annum.

CHESTERFIELD AND NORTH DERBYSHIRE HOSPITAL.—Second House Surgeon. Salary £150 per annum, with board, &c.

DARLINGTON HOSPITAL AND DISPENSARY.—House Surgeon. Salary £160 to £200 per annum, with board, &c.

DEWSBURY COUNTY BOROUGH.—Female Medical Practitioner. Salary £300 per annum, &c.

DOVER, ROYAL VICTORIA HOSPITAL.—House Surgeon, unmarried. Salary as arranged, with board, &c.

DUDLEY, GUEST HOSPITAL.—Assistant House Surgeon for six months. Salary at rate of £120 per annum, with board, &c.

EXETER, ROYAL DEVON AND EXETER HOSPITAL.—House Physician for six months. Salary at rate of £150 per annum, with board, &c.

GRAVESEND HOSPITAL.—Female House Surgeon. Salary at rate of £200 per annum, with board, &c.

HASTINGS, EAST SUSSEX HOSPITAL.—House Surgeon. Salary £150 per annum, with board, &c.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton. Assistant Resident Medical Officer. Salary £100 per annum, with board, &c.

HUDDERSFIELD ROYAL INFIRMARY.—Senior House Surgeon and Assistant House Surgeon. Salaries £150 and £100 per annum, with board, &c

KING'S COLLEGE HOSPITAL, Denmark Hill, S.E.—Assistant Obstetric and Gynæcological Surgeon.

LEAMINGTON SPA, WARNEFORD GENERAL HOSPITAL.—Two Resident Medical Officers. Salary £250 and £150 per annum, with board, &c.

LONDON TEMPERANCE HOSPITAL, Hampstead-road, N.W.—Assistant Resident Medical Officer for six months. Salary at rate of £120 per annum, with board, &c.

MANCHESTER NORTHERN HOSPITAL FOR WOMEN AND CHILDREN, Park-place, Cheetham Hill-road.—Female House Surgeon. Salary £120 per annum, with board, &c.

METROPOLITAN HOSPITAL, Kingsland-road, N.E.—Surgeon for Diseases of Women.

MIDDLESBROUGH, NORTH ORMESBY HOSPITAL.—Assistant House Surgeon. Salary £150 per annum, with board, &c.; or Senior Student, £100 per annum.

MUNITION FACTORIES.—Medical Women required.

NEW HOSPITAL FOR WOMEN, Euston-road, N.W.—Female Senior Clinical Assistant to Out-patient Department; also as Anæsthetist. Salary £10 10s. per annum. Also Clinical Assistants, Wednesday and Saturday afternoon.

PLYMOUTH, SOUTH DEVON AND EAST CORNWALL HOSPITAL.—House Surgeon. Salary £250 per annum, with board, &c.

PRESTON ROYAL INFIRMARY.—Resident Medical and Surgical Officer. Salary as arranged.

READING, ROYAL BERKSHIRE HOSPITAL.—House Physician for six months. Salary £250 per annum, with board, &c.

SHEFFIELD CITY HOSPITAL (INFECTIOUS DISEASES).—Assistant Medical Officer. Salary £225 per annum, with board, &c.

SHEFFIELD ROYAL INFIRMARY.—House Physician. Salary £120 per annum, with board, &c.

SUNDERLAND, COUNTY BOROUGH.—Temporary Tuberculosis Medical Officer. Salary £500 per annum.

THE Chief Inspector of Factories, Home Office, London, S.W., gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at Faringdon, Berks; and at Tregaron, Cardigan.

Births, Marriages, and Deaths.

BIRTHS.

BRIDE.—On May 23rd, at Beechwood, Eccles, the wife of Lieutenant T. Milnes Bride,, R.A.M.C., of a daughter.

GOOD.—On May 23rd, at Dobbs, High Bickington, N. Devon, the wife of Arnold S. Good, M.R.C.S., L.R.C.P., of a son.

HAYDEN.—On May 25th, at Wymering-mansions, W., the wife of Captain A. F. Hayden, M.B., F.R.C.S., I.M.S. (retired), of a son.

HODDER.—On May 26th, at Sandon-road, Stafford, the wife of Lieutenant-Colonel A. E. Hodder, R.A.M.C. (T.), of a daughter.

O'CONNOR.—On May 29th, at Alexandra-mansions, Chelsea, to Captain F. W. O'Connor, R.A.M.C. (temporary) and Zella O'Connor, a daughter.

MARRIAGES.

BOLT—RINGLAND.—On May 23rd, at St. Anne's Church, Lewes, Captain Richard Frank Bolt, R.A.M.C. (T.C.), to Effie Lyndall, younger daughter of the late W. R. Ringland, of Belfast, and Mrs. Ringland, of Lewes, Sussex.

HEY—BROWN.—On May 23rd, at the Wesleyan Chapel, Darcy Lever, Bolton, Wilson H. Hey, F.R.C.S. Eng., Captain, R.A.M.C., to Elsie Brown, M.B., Ch.B.

HILL—LANGRIDGE.—On May 23rd, at Newmarket, Rowland Hill, M.D., M.R.C.P. Lond., Temporary Surgeon, R.N., to Gertrude, daughter of the late Arthur Langridge, Leytonstone.

DEATHS.

ALEXANDER.—On May 26th, at Poole-road, Bournemouth West, William Alexander, M.D., in his 54th year.

GOODHART.—On May 28th, at Portland-place, W., Sir James Frederic Goodhart, Bart., M.D., F.R.C.P., aged 70 years.

KIMBELL.—On May 28th, at a nursing home in London, Lieutenant Harry John Sullings Kimbell, R.A.M.C.

N.B.—A fee of 5s. is charged for the Insertion of Notices of Births, Marriages, and Deaths.

The following magazines, journals, &c., have been received:—Albany Medical Annals, Pediatrics, Journal of the Missouri State Medical Association, Tropical Diseases Bulletin, Monthly Bulletin of the Office International d'Hygiène Publique, Psychoanalytic Review, Bulletin of the Johns Hopkins Hospital, American Journal of Medical Sciences, American Journal of Surgery, American Journal of Roentgenology, St. Mary's Hospital Gazette, St. Thomas's Hospital Gazette, American Medicine.

Notes, Short Comments, and Answers to Correspondents.

MEDICAL NOTES ON HISTORICAL MANUSCRIPTS.

FOLLOWING is the final instalment of these historical extracts. The first two were published in our issues of May 20th and 27th.

£100 for a Cure.—Hugh Baylye to Sir Robert Cecil, 1593, Oct.—The charge which I have taken in hand for the cure of Mistress Franncys Cecill that she should go well and perfect of herself; now, thanks be to God, she is well and out of her instruments. My bargain was, when I took her in hand, to receive for the curing of her £100. I desire you therefore that I may be satisfied.—Endorsed: "1599, Oct. For £100 for curing the Lady Fr. Cecil."

A "Dislocated" Foot.—Lord Cobham to Sir Robert Cecil, 1599-1600.—On Sunday last my foot was put in joint, which being so long out, and the party which set it thought skilful, yet old and weak, that it was very near a whole hour before he could put in the bone. Judge what pain I endured; since the splinter which is of iron to keep the bone in must not be altered for 14 days, and is so hard tied about my foot that the pain I now endure is very great, besides the cold weather which increases it. They assure me for my comfort that there is no blemish to my leg.

Suspected Witchery.—Jo. Stileman to Sir Robert Cecil, 1600, Sept. 9.—Mr. Amyce is a little amended, and some hope of him. Upon the examination of a notable witch, which he had committed to the gaol at Hertford, for her revenge did inflict her witchery upon him in such a manner that he was almost consumed to the bone. His doctors could not tell what to make of it, the manner of it was so strange unto them. In the end he said he thought he was bewitched by that lewd woman he had before committed. When I heard of it I sent presently to a woman that dwelt 12 miles from Waltham, which I had heard of her skill in those matters. She sent away presently to him with some things that he should take that night before he went to bed. He presently on the receipt found an alteration in himself, and that day at dinner he did eat more meat than he had done all the time of his sickness.—From your Honour's house at Theobaldes, 9 Sept., 1600.

A Young Nobleman's Strange Illness and Death.—Thomas Bilson, Bishop of Winchester, to Sir Robert Cecil, from Waltham, 1601-2, Feb. 24.—I am heartily sorry that my endeavour for the young Lord Burgh taketh no better success. He complained of a crick in his neck on Thursday fortnight, and thereupon kept his chamber, but without any apparent fever. I sent for physicians, who doubted the new disease in him, and thought it best to expect some declination of the heat which troubled him at times. On Thursday night last he went to bed in reasonable plight and slept more heavily than he was wont. I sent presently for as more learned physicians as Hampshire did yield, and after some pause they doubted he was falling into a kind of lethargy. This next Thursday is the seventh day since this heaviness oppressed him. How this disease should grow so strangely I cannot conjecture. I have only noted that he desired to feed much on fat meats, and have had many small combats with him to bring him from that diet, so that often he hath risen hungry from the table because I would not suffer him to feed on so oily and unctuous meats as he affected. His nimbleness of body made me least suspect a lethargy of all diseases, and his sullenness when displeased made us nothing to doubt that event which afterwards showed itself. The danger is greater if this collection of flux (?) and oily matter be fastened to the receptacles of the brain. If the matter be more tractable we conceive hope it may decline. If not, I can but rest pierced at heart for the loss of so noble an imp.

From the Same to the Same, 1601-2, March 1.—The sorrowful event of the young Lord Burgh's sickness could not choose but come to your ears afore this. The physician whom his mother sent was here when he died, and the lady herself within 14 miles. I stayed, therefore, till the corpse were viewed by physicians and surgeons and laid in cere-clothes that it might abide your directions for burial. In opening it they found the vital parts very sound and fair, but the left side of the lung somewhat black and perished, with a flux from his head, which was the cause of his often cough. The outward tunicles of the head they found clear and free from any corrupted phlegm, only in the inward cells of the brain they found four or five spoonfuls of water, and in the cell of the commonsense, which lieth before, the signs of the corruption which brake from him at the time of his death. The physic used to him in the time of his sickness I would not suffer to be dangerous or desperate, but such as was warranted by their best books. On the 7th day his head began to burn and shoot, whereupon one of the physicians here thought good to lay a rose-cake with a little *oxyrhodanon* to his head. That night he slept well, and the physician asked leave to depart till Sunday, and prayed me against that day to have other physicians of Hampshire here to consider the child's case in common with him. That Friday the child rose and eat somewhat of a roasted warden and a spoonful of broth, which he kept not long, but gave it up again. The Saturday he continued desirous to sleep, but because many children about us sick of this new disease did sleep three or four days and yet recovered, so we mistrusted nothing. When Dr. Hilton, physician of Winchester, came, he thought good first to have his body cleansed with a suppository (for we doubted he would not receive a clyster without danger) and then to keep him awake and provoke him to bleed at the nose. After dinner on Monday they began by all gentle and safe means to provoke him to sneeze and bleed at nose and hawk at mouth. They gat him to sneeze often and strongly but could not effect aught else, though his broths and jellies were made to this end. The Tuesday they thought good with "beazoer" to bring him into a gentle sweat, which they did for an hour. Wednesday they consulted whether they should let blood or no, his pulse being good, but while they were discussing the child fell into a swoon and lost the use of his right eye, the lid shutting and never opening again. This put them from all opinion of taking blood, but only to try whether by vapouring they could provoke any matter to come forward. In that case he lay till Thursday night that Dr. Poo came from my Lady. He put up the powder of castor with a "nasale" and spirit of "secke" with a syringe into the nose and palate, at which the child exceedingly struggled, but without result. The physicians in my absence protested that this course would thoroughly sift him and send him one way or other, which they had no commission to do, save that he was a man trusted and sent by my Lady. Friday, towards 11, the child began to push out at mouth and nose a white matter and blood, and at the third or fourth plunge, being held forward, gave up the ghost. There remaineth the disposing of his body, which is in such case as it will stay these eight or ten months.—From my house at Waltham, 1st March, 1601.

Queen Elizabeth's Health.—Sir Robert Cecil to Mr. Nicholson, March 9, 1602-3.—I would not have you ignorant of those things which are like enough by bruit to pass into Scotland concerning matter of the nature whereof I now must write. First, it is true that till within these 10 or 12 days I never beheld other show of sickness in the Queen than such as is proper to age. Now her Majesty is free from any peril, but, because all flesh is subject to mortality, I must confess to you that she hath been so ill disposed as I am fearful lest the continuance of such accidents should bring her Majesty to future weakness and danger of that which I hope mine eyes shall never see. Although she hath good appetite, and neither cough nor fever, yet she is troubled with a heat in her breasts and dryness in her mouth and tongue, which keeps her from sleep, greatly to her disquiet. This is all, whatsoever you hear otherwise. She never kept her bed, but was, within these three days, in the garden.

Sir Robert Cecil to Mr. Secretary Herbert, 1602, March 9.—It is very true that her Majesty hath of late for 8 or 9 days been much deprived of sleep, which you know was ever wont to moisten her body, and whenever she lacked it she was ever apt to be impatient. This continuance for 9 or 10 days decays her appetite somewhat and drieth her body much, wherein, though she be free from sickness in stomach or head, and in the day catcheth sleep, yet I cannot but affirm unto you that if this should continue many months it promiseth no other than a falling into some great weakness or consumption which would hardly be recovered in old age; other peril I assure you there is not, and therefore, though I write the worst to you, yet I pray you suppress all other vain bruits the best you can.

Fleeing from the Plague at Amsterdam.—The Council to Lord Cobham, Lord-Lieutenant of Kent and Lord Warden of the Cinque Ports, 1602, July 25.—They understand that the plague reigns very greatly in Amsterdam, and that many of the inhabitants are retiring themselves into this realm, and some already come with purpose to disperse themselves in the port towns and in London. As the toleration of this access cannot but breed great peril Cobham is directed to have diligent watch kept in his Lord Wardenry and Lieutenancy, to prevent their landing during the time of the infection there. If any be already come into the towns they must be made to retire themselves into some quarters abroad in the fields the better to air themselves, and remain until they have cleared themselves by the trial of 40 days.

The Physicians of Padua.—Lord Buckhurst to Sir Robert Cecil, 1602, Aug. 20.—Now I must desire you humbly on my behalf to move her Majesty in a suit which I hope she will think reasonable, just, and charitable, whereof I beg leave to use some little preface to the matter. There hath been beyond seas for recovery of his health, by her Majesty's license, at Pont Amouson in Germany, one of my sons these three years. Her Majesty will remember him by the token that of all the children I had he was the finest and comeliest boy in nature, with such a rare curled head as her Majesty pleased to take a very special liking of him, but such was his misfortune as in a very great sickness he fell into a lethargy, from which time he hath fallen into a distraction of his senses. As for his cure by practice of physic and otherwise in England and abroad, he hath cost me above £2000, but now, having been these two years in Germany, where I was put in hope some good effect should have followed, I have about a month past received advertisement that after all my cost and so long a time consumed he is rather worse than better, and so no hope of any good to come from that place. Wherefore now I am resolved to send him to Padoa, where I will commit him to a council of physicians there, being assured that if by the skill and knowledge of physic he be to be cured that place above all the world doth yield the most rare and excellent physicians to perform it. The time for his travel to Padoa is now betwixt this and Michaelmas, and for that my son Thomas Sacvill, who is so much devoted to the wars of Hungary, hearing now of such preparations by the Turk against next summer, doth again desire to put himself into that service, as also for that by reason of a fall which he had from his horse in the camp at his last being there he hath had a long pain, which is now much lessened but not fully cured, and is put in great assurance that by the baths at Padoa the same will be recovered; therefore he is willing at my desire to pass to that place of Germany where his brother is, and so to pass to the Emperor's Court and there to remain this winter, from whence he will from time to time advertise me of such occurrences as there are to be had. ..... I beseech you to move her Majesty for her license of travel, for he must bring his brother from Pont Amouson to Padoa by Michaelmas. [In a letter dated Nov. 2, 1602, Lord Buckhurst informs Sir Robert Cecil of the arrival of the two brothers at Padoa.]

Foul Practice.—Lord Zouche to Sir Robert Cecil.—The cause of my writing is the pity of the bearer hereof, one John Aston, who is found a lunatic out of the Court of Wards by his wife's procurement, being once sick and in that sickness raving; which woman, having no children by him and finding that by his will he had not left her so much as she desired, took that occasion to procure a commission whereby to draw to herself all his goods, since which time he has been so kept as it would have made a sound man lunatic. He got away by stealth to this place, whom we would not believe till we had sent our letters to Mr. Davis of this Council, commended for a wise and honest gentleman, a copy of whose reply is enclosed, whereupon we took some further examination of the matter. But the man's want of money and friends; his dissolute life in loving drink and women, have many times procured as evil speeches as from a lunatic, which hath given them great colours to their foul device; but if you will enquire into the matter, you will find it a foul practice.—Ludlow, 5 Dec., 1602.

Lapis Malacensis.—A Memorandum, dated 1602.—Lapis Malacensis, or the stone of Malacca, so named because it is brought from Pam, a province of Malacca in India. It is found in the gall of an *histrix*, or porcupine, and is there esteemed a most singular remedy against all

poisons. Doctor Garcia ab Horto, after he had remained 34 years in India, writ a learned book of all the simples and drugs of India, wherein he reporteth that in all his time there were but two found, whereof one was bestowed upon the King of Portugal's Viceroy of India as a most rare and precious present. This was of colour a pale purple, smooth and glib, bitter of taste, and in consistence like unto a piece of dried cake soap, and unctuous under the finger. Doctor Dimas Bosque, born at Valencia in Spain, and then the Viceroy's physician in India, gave common water, because no cordial water was at hand, wherein the stone had been steeped until the water became very bitter, unto two men which unawares had drunk poison, whereby they were both delivered from danger of the poison. In India, therefore, it is preferred far before the bezoar stone or unicorn's horn.—Lancelot Browne.

RECENTLY a girl travelling along the Strand on the top of a motor omnibus was burned to death through the lower part of her dress catching fire. According to the evidence given at the inquest, a Canadian soldier and a member of the Royal Flying Corps made a plucky effort to extinguish the flames as soon as they could unbutton their tunics and throw them round the deceased, and the conductor did his best to assist with the omnibus aprons and a chemical extinguisher. The material of the dress, however, which was described as "voile," was so inflammable that the flames enveloped the deceased immediately. The top of an omnibus is evidently an awkward place for such an accident, as the first step to be taken on such an occasion, that of throwing the victim flat, would be difficult to accomplish and she might also be difficult to get near effectively. The origin of the fire could not be ascertained, but there can be little doubt in the circumstances that this poor girl's death was caused by the abominable carelessness of a smoker in throwing down a lighted match or possibly, but less probably, the end of a cigarette or cigar.

"*Income Tax.*"—It has been the general custom in the past to allow a medical man to deduct two-thirds of the rent and taxes of his dwelling house and appurtenances, if partly used for professional purposes, when making his return for income-tax. Assuming that our correspondent has only the necessary premises to carry on his practice with professional propriety, and does not, maintain a large establishment by his private income, he should press for the full two thirds allowance with the assessor, and appeal to the Commissioners if necessary. It must be remembered, however, that the amount of the deduction is left to the discretion of the Commissioners to decide after due consideration of the particular circumstances, and that there is no *legal* deduction of two-thirds as suggested by our correspondent.

J. H. S. (Athens, Ga.).—The two units of the American Red Cross (E. and F.) detailed for service in Great Britain were recalled on Oct. 1st, 1915. All other units have also been recalled, including that at La Panne, Belgium, although individual members of the American Red Cross are still serving. Red Cross supplies are still being sent to the various countries and a supply depôt has recently been established in Egypt. The American Women's War Hospital at Paignton, South Devon, remains in full swing under the care of Dr. Penhallow and Dr. Daniel. We do not know the *locale* of an American ambulance corps in Europe, but the hospital known as the American Ambulance in Paris is well known.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Thursday, June 8th.

OBSTETRICS AND GYNÆCOLOGY (Hon. Secretaries—Cuthbert Lockyer, H. Russell Andrews): at 8 P.M.

Specimens:

Mr. J. D. Malcolm: Strangulation of Fibromyomatous Uterus caused by Torsion of the Corpus Uteri on the Cervix.

Dr. F. J. McCann: (1) Case of Pregnancy in a Large Fibromyomatous Uterus; (2) Soft Fibroma of the Paravaginal Connective Tissue.

Short Communications:

Dr. H. Russell Andrews: (1) Three Cases of Hæmatoma of Abdominal Wall; (2) Case of Primary Abdominal Pregnancy.

Paper:

Dr. John Phillips: Acute Hepatic Toxæmias complicating Pregnancy and Labour.

RÖNTGEN SOCIETY, Institution of Electrical Engineers, Victoria Embankment, W.C.

TUESDAY.—8.15 P.M., Annual General Meeting. Paper:—Prof. J. W. Nicholson: Homogeneity of Visible Radiation. Exhibition of X Ray and Electrotherapeutic Apparatus. Demonstrations and Short Descriptions of New Apparatus will be given by the exhibitors.

BRITISH OTO-LARYNGOLOGICAL SOCIETY, 11, Chandos-street, Cavendish-square, W.

THURSDAY.—5 P.M., Meeting.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, road, W.

MONDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye. Dr. Simson: Diseases of Women.

TUESDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations. Dr. Simson: Diseases of Women.

THURSDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye.

FRIDAY.—10 A.M., Dr. Simson: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Eye Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY.—Clinics:—10.30 A.M., Surgical Out-patients (Mr. B. Gillespie). 2.30 P.M., Medical Out-patients (Dr. T. R. Whipham): Gynæcological Out-patients (Dr. Banister). 3 P.M., Medical In-patients (Dr. R. M. Leslie).

TUESDAY.—2.30 P.M., Surgical Operations (Mr. Carson). Clinics:—Medical Out-patients (Dr. A. G. Auld); Surgical Out-patients (Mr. Howell Evans); Nose, Throat, and Ear Out-patients (Mr. C. H. Hayton). Radiography (Dr. Metcalfe). 3.30 P.M., Medical In-patients (Dr. A. J. Whiting).

WEDNESDAY.—Clinics:—2.30 P.M., Throat Operations (Mr. C. H. Hayton). Children Out-patients (Dr. T. R. Whipham); Eye Out-patients (Mr. R. P. Brooks); Skin Out-patients (Dr. H. W. Barber). 5.30 P.M., Eye Operations (Mr. R. P. Brooks).

THURSDAY.—2.30 P.M., Gynæcological Operations (Dr. A. H. Giles). Clinics:—Medical Out-patients (Dr. A. J. Whiting); Surgical Out-patients (Mr. Carson); Radiography (Dr. Metcalfe). 3 P.M., Medical In-patients (Dr. R. M. Leslie). 4.30 P.M., Special Demonstration:—Dr. G. G. Macdonald: Aids in the Diagnosis of Disease by Clinico-Pathological Methods.

FRIDAY.—2.30 P.M., Surgical Operations (Mr. Howell Evans). Clinics:—Medical Out-patients (Dr. A. G. Auld); Surgical Out-patients (Mr. B. Gillespie); Eye Out-patients (Mr. R. P. Brooks).

THE THROAT HOSPITAL, Golden-square, W.

MONDAY.—5.15 P.M., Special Demonstration of Selected Cases.
THURSDAY.—5.15 P.M., Clinical Lecture.

ROYAL INSTITUTION OF GREAT BRITAIN, Albemarle-street, Piccadilly, W.

MONDAY.—5 P.M., General Meeting.
FRIDAY.—5.30 P.M., Dr. B. Clarke: Eyesight and the War.

CHADWICK PUBLIC LECTURES, Town Hall, Ilford, E.

Course of Three Lectures on the Prevention of Disease and Frostbite in the Army.

FRIDAY.—8 P.M., Lecture I.:—Professor S. Delépine: Process o Disinfection (illustrated by diagrams and lantern slides).

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, May 31st, 1916.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
May 25	29·570	S.E.	0·05	121	66	55	56	58	Raining
" 26	29·890	W.	...	122	65	49	50	55	Fine
" 27	29·860	S.W.	...	98	65	49	50	56	Fine
" 28	29·890	S.W.	...	129	70	51	53	58	Fine
" 29	29 970	W.	...	129	73	52	52	60	Fine
" 30	30·004	N.W.	0·05	93	64	56	53	57	Cloudy
" 31	30·136	S.W.	...	115	70	51	53	56	Fine

MANAGER'S NOTICES.

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The revised Inland Subscription rates are:—

One Year	£1 3 3
Six Months	0 13 8
Three Months	0 7 0

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The Chadwick Lectures
ON
TYPHUS FEVER IN SERBIA.

Delivered at the Royal Society of Medicine on Oct. 20th and 29th and Nov. 3rd, 1915,

BY R. O. MOON, M.D. OXON., F.R.C.P. LOND.,
CONSULTING PHYSICIAN, WESTERN GENERAL DISPENSARY, MARYLEBONE, ETC.

LECTURE III.[1]

PROPHYLAXIS AND TREATMENT OF TYPHUS.

MR. PRESIDENT AND GENTLEMEN,—Our knowledge of typhus at present, unlike our knowledge of enteric fever, is insufficient to enable us by any form of inoculation to afford such a measure of immunity to the individual as has been effected with such conspicuous success in the case of enteric fever and to which the small mortality from that disease in the present campaign is so largely due. Since, then, we cannot attack the germ or seed of the disease directly, we must proceed indirectly by attacking the supposed carriers of the germ, and by improving the general environment and circumstances of the individual render him less liable to fall a victim to the disease. Where we have no control over the seed we can still do much by our action upon the soil.

From what has been said in a previous lecture it will be realised that the three main factors associated with the production of typhus are (1) dirt, (2) overcrowding, and (3) destitution. These, therefore, are the things which any public authority must attempt to overcome in order to render a community free from liability to typhus.

Sanitation and Personal Cleanliness.

Now, as regards the first of these factors—dirt—a great deal may be done by sanitary legislation and a suitable system of drainage for the promotion of cleanliness, and in England, which is rightly regarded as the pioneer country in all sanitary matters, a great deal has been done to ensure the cleanliness of our towns. To this very largely we may ascribe our almost complete freedom from typhus during the past 40 years, and, indeed, it constitutes one of the triumphs of the founder of these lectures. On the other hand, personal cleanliness is a good deal a question of habit and tradition, and cannot be inculcated on a people in the twinkling of an eye. Chadwick himself was never tired of insisting upon the importance of personal cleanliness, thus he says in one of his writings: "Of the lessons that may be taught in schools the practice of cleanliness is of the highest order. A filthy population is everywhere a low moral population, but it is futile to enforce cleanliness in the absence of proper appliances for its practice. Five washed children may be sustained on the food requisite for four that are unwashed to bring them up to the same condition. Besides, the washing itself is preventive of infections and of contagious diseases, such as the itch and other disease. We have various leagues, temperance leagues and others, to promote social reforms, but in my view the most important league we could have would be a national league for the enforcement of personal cleanliness and regular ablutions as a means of protection from epidemics as well as for promotion of the general health. ..... A trade rule, if work people could be brought to understand or to make it, that no one should be allowed to leave his work unwashed, or to join in work unwashed, would be of far higher economical importance to their class, would tend more to their social elevation, than all the trades unionist regulations put together." It has also been said that "in our Indian cities Musselmans who are distinguished for their attention to ablutions, though exposed to the same bad atmosphere as other people, are distinguished also by far less suffering from epidemics." Curiously enough the Turks, of whom there were a very large number in Skoplje, whose towns, streets, and houses are everywhere throughout the world a byword for all that is filthy and vile, chance to be fairly clean personally, owing to the frequent ablutions enjoined on them by the Mahommedan law, and, on the whole, there is reason to think that they suffered less than the Serbians from the typhus epidemic.

Overcrowding and Ventilation.

Overcrowding has to be combated by the free admission of fresh air. Here we are unable to do much by direct legislation; true, indeed, the abolition of the window tax did much negatively to admit fresh air into the dwellings of the poor, but we must look for a long period of education before the importance of fresh air is realised in practice from the top to the bottom of society. It is no use telling people that they must have open windows when they are insufficiently clad, and when the numerous cracks and crevices in roof and walls make them only too anxious to obstruct all currents of cold fresh air. In any given town a sufficient amount of cubical space should be allowed, at least 500 cubic feet per head with free ventilation—i.e., the supply of 3000 cubic feet of fresh air per head per hour. Ventilation has a marked influence on the contagion of typhus, and the prophylactic importance of it cannot be too much emphasised. Those sick of typhus should be treated in large, well-ventilated wards, from 1500 to 2000 cubic feet being allowed to each patient, and the beds should be at least 6 feet apart. Even in winter there is but little danger of catching cold while the fever lasts; and there is good reason to believe that an abundant access of fresh air may positively control the bronchial catarrh and other pulmonary affections of typhus, which do not result from cold but from passive hyperæmia of the bronchial mucous membrane and of the parenchyma of the lungs. The importance of ventilation is further shown by the way in which the season of the year affects the death-rate; thus it drops to a minimum as summer advances, but rises to a maximum in late winter and spring, this increase being probably due to the concentration of the poison in close rooms. The poison has always been found most virulent when large numbers of persons have been crowded together in improperly ventilated and ill-kept localities under bad hygienic conditions; thus prisons, badly planned barracks, inns and lodging houses of the lowest kinds, workhouses, ships, and defectively built hospitals are the chief foci of the disease—hence the synonyms for typhus, namely, "prison fever," "ship fever," "lazaretto fever," "camp fever," and so forth.[2]

Destitution.

We have seen in the first lecture how often typhus has followed upon bad harvests, particularly in Ireland, and the consequent wretchedly ill-nourished condition of the people. This difficulty has been overcome in the British Isles by the supply of cheap imported food from abroad. Now, it is the difficulty of providing an adequate amount of good food which constitutes one of the causes why typhus is so frequent an accompaniment of armies in the field and besieged garrisons. In the latter case the reason is fairly obvious; but armies in the field which begin with proper supplies of food often, owing to the exigencies of war, become separated at least temporarily from their base, and then begins the necessary evil of half or quarter daily rations. To supply armies in the field continuously with suitable and sufficient food has always been a great military problem, never, perhaps, so satisfactorily solved as by the English and French armies in the present war. This question of commissariat was certainly a great difficulty in Serbia, as it must be for any country which has not had long training in elaborate forms of organisation. Serbia, too, one must remember, has had two wars since 1912, prior to the outbreak of this one, and by the victory of December, 1914, she became saddled with 67,000 Austrian prisoners, thus imposing a further serious strain upon her food-supply.

Hospital Arrangements at Skoplje

Skoplje, to which my personal experience has been confined, is a large town of some 30,000 inhabitants, a considerable number of them being Turkish; there is, in fact, a Turkish quarter of the town. Until the Balkan War of 1912 it was Turkish and rejoiced in the Turkish name of Usküb. It is a most beautifully situated town, surrounded by snow-capped mountains and watered by a rapid flowing river—the Vardar—which enters the sea at Salonika. Some of its

[1] Lectures I. and II. were published in THE LANCET of May 27th (p. 1069) and June 3rd (p. 1111), 1916, respectively.

[2] Nothnagel's Encyclopædia, article Typhus Fever, English edition, p. 489.

admirers have compared it to Florence. It is of considerable antiquity and by some authorities considered to be the birthplace of the Emperor Justinian. The Serbians are justly proud of it, as it was their ancient capital in the fourteenth century when the Serbian Empire in the famous reign of Stephen Dusan extended over the greater part of the Balkan peninsula, but on the fatal field of Kossovo (1389) the Serbians, owing to treachery, were defeated by the Turks and Usküb was lost to Serbia for more than 500 years.

In this town there were some six hospitals, or rather buildings temporarily converted into hospitals, but they were not situated in places most suitable for hospitals. The first thing to be done on the outbreak of the epidemic was to establish a hospital for typhus cases only, which should be quite outside the town. This the English proceeded to do largely owing to the energy of Lady Paget, acting in conjunction with the British Red Cross Society. Accordingly, two buildings were placed at their disposal by the officer in command of the district, with the promise of three more to follow shortly; they were situated about one and a half miles out of the town on a hill in most healthy surroundings. The Serbian authorities quickly perceived the importance of this method of combating the disease and assisted energetically; a system of compulsory notification of the disease was begun which was much in advance of anything that had been done before. There were also instituted compulsory isolation of cases, compulsory disinfection of houses and clothing, compulsory formation of observation wards in all the hospitals, compulsory examination of all passengers leaving trains at Skoplje, and compulsory closing of all public places, churches, mosques, theatres, &c. Much of this was a counsel of perfection, as it was clearly impossible to put such unwontedly drastic measures into operation all at once.

Another large hospital, known as the Polamecetz (half moon), already existed on the outskirts of the town. It had been built by the Turks a few years previously as an isolation hospital, and in general structure it was a fine building, though, in my opinion, too much space was devoted to administrative purposes. Here all kinds of cases were herded together—dysentery, enteric fever, typhus, erysipelas, scarlet fever, measles, diphtheria, and even cases of small-pox. Separated from the main building by some 20 yards, the Serbian authorities had erected two small "barracks" for the immediate reception of typhus cases, each containing about 27 beds; as the new hospital for typhus patients only was completed they were drafted off there. But for a time there was a great congestion in this hospital, the wards being at first awfully crowded; frequently one found two men in one bed, while often there would be three or four women in a ward of 16 or 18 men, and many typhus patients were at first mixed up with the more general cases in the main building, while dirt and uncleanness reigned supreme. On the whole, it was somewhat surprising to me that the typhus did not spread in this hospital to the non-typhus cases, in spite of the fact that many of the cases, at times owing to mistaken diagnosis but more often from actual want of space, were placed in beds next to cases of dysentery, relapsing fever, diphtheria, and other diseases. This may have been due to the fact that the wards themselves, though dirty, were large, bright, and airy; the window space was good and there was no difficulty in opening the windows, though it was not always so easy to keep them open when one's back was turned. Professor Curschmann, out of his large experience at a special typhus hospital in Berlin, says that "owing to the fact that the contagion is not easily carried to a great distance when an isolated case of typhus fever is admitted to a hospital by mistake or want of judgment, the disease does not spread beyond the patient's immediate neighbours, provided the wards are large and airy." It is easy enough to speak of free ventilation, but not so simple to carry it out when it is impossible to guarantee warm clothing. Days, and particularly nights, in Serbia during March and April may be quite cold, and frequently there are snowstorms. It is no use insisting upon open windows if you cannot ensure adequate warm clothing for the patient. As some means of keeping the atmosphere sweet we used large spray syringes containing rather more than a pint; these were filled either with perchloride of mercury 1 in 2000 or with carbolic acid 1 in 20, and sprayed about the wards—the walls and floor, particularly under the beds, to the manifest delight of the patients.

Conveyance of Infection.

Although we do not know the specific cause of typhus, yet all analogy points to its being due to a micro-organism, and though we are ignorant of the nature of this micro-organism,[3] so that we cannot destroy it directly, nor yet make any form of culture which by inoculation might serve as a prophylaxis against it, we do know that to a large extent the *materies morbi* is carried by lice, and that it is by the bite of these creatures that the poison may be conveyed. Hence the most direct way of stopping the spread of typhus is to destroy the lice. Whenever possible, prior to the admission to hospital all personal clothes, bed linen, &c., should be thoroughly heated and a careful search made for lice on the skin and in the hair. After admission to the hospital careful watch should be kept for lice in order to be certain that none have escaped detection. Several doctors in Serbia considered that there was a great advantage in thoroughly anointing the body with some form of petrol, of which hemijelli is the best known. Dr. Howard Barrie, who was at the head of the English Red Cross in Serbia, employed ordinary kerosene, such as is used for lighting. Where the oil irritates the skin unduly it was found useful to dilute it with ordinary vaseline, equal parts of kerosene and vaseline forming an excellent application for delicate skins. This proved to be an efficient and economical insecticide. Doubtless, if one has at hand all necessaries the most useful method of dealing with an epidemic such as that which has ravaged Serbia would be that suggested by Dr. Hort—namely, to have an unlimited stock of hospital tents, which should be frequently moved, unlined clothing which will stand dry heat, and large galvanised tanks containing carbolic solution for the reception of infected urine.[4]

The possibility of the typhus contagion being conveyed by lice was realised as far back as 1876 by Murchison, who said that it was essential for the body to be protected from lice. Though there would seem to be but little doubt that lice are effective agents in transmitting the contagion there is no reason to think that this is the only method, but that it may also be received by direct inhalation. Such was the opinion of Murchison, and I found it was shared by many Serbian doctors, who had had much experience of typhus in Russia and in an epidemic at Adrianople. This certainly is my own opinion. The way in which typhus so often attacks doctors and nurses who are brought into close contact with the patients would seem to point to the likelihood of this more direct mode of infection. It is probable that for some time before and after as well as during the febrile period of typhus fever the contagion continues to reproduce itself in the immediate surroundings of the patient. During this time it undoubtedly attaches itself to the dust in the atmosphere and is easily transferred to inanimate objects handled by the patient, on which under favourable circumstances it may maintain its virulence for some time. Among these objects are clothing, underwear, bedclothes, carpets, upholstered furniture, and, in fact, all objects with a rough, woolly surface.[5]

All epidemics vary greatly in their type of severity; as a rule, in any given epidemic the more severe cases come first and the poison seems gradually to lose its virulence. In the United States the disease is nearly always of a mild type, and this is considered, and with reason, by American authors to be due to the excellence of the hygienic surroundings for which America is justly famous. The mortality there has been reported as having been as low as 1 per cent., which is practically unheard of elsewhere. In an interesting account of an epidemic which occurred recently in Palestine (1913–14) Dr. C. H. Corbett said that the mortality in the prisons of Jerusalem reached as high as 50 per cent. As showing how the infection may be transmitted by clothes, Dr. Corbett gives an instance of infection from a mattress which had been disinfected and exposed for some days to the brilliant sunshine of Palestine. This mattress was then unpicked to be remade. The man engaged in this work was attacked by the disease; he was treated in his own home by a Turkish doctor without suitable nursing and he died.[6] The belief in the connexion of typhus infection with clothes is shown by

[3] A number of observers have cultivated from the blood organisms of a diplococcal nature.
[4] E. C. Hort, Brit. Med. Jour., April 13th, 1915.
[5] Nothnagel's System of Medicine.
[6] Brit. Med. Jour., May 22nd, 1915.

the Spanish word for the disease, "tabardillo," which means a peasant's cloak.

Preventive Measures Advocated Early Last Century.

It is curious to read now of the prophylactic measures to be adopted against typhus which were recommended early in the last century by Hildebrand, of Vienna, who appears to have had some inkling of the distinction between typhus and enteric fever before the English, French, or American physicians had recognised it. Thus he writes:—

1. Never approach a case of typhus on an empty stomach, or when the body is wet and cold. It is always better to take some wine or brandy or some small meal, or to make the body less receptive of infection by moderate warmth.
2. At the patient's bed one must diligently blow the nose; it is advisable to hold strong smelling substances in front of the nose and to wash the mouth with vinegar.
3. Smoking tobacco is more important before than after the visit to the sick bed.
4. After the visit one must carefully wash the hands and face with cold water. Clothes must be changed and the old ones cleaned by washing or smoking.
5. Always avoid woollen clothing, which, however, according to the ordinary custom it is scarcely possible for men to do.
6. Cold is the greatest prophylactic against all animal infection; the use of a cold bath or repeated cold washing of the whole body or rubbing the same with snow protects against a developing typhus or even obliterates it in its beginning.

Anticipating modern sanitary legislation, Hildebrand says that the prevention of typhus should be an important part of medical policy. The same measures should be applied for getting rid of typhus as for the removal of oriental plague. As public measures he recommends:—

1. Special typhus hospitals should be established analogous to the English fever hospitals.
2. Typhus patients must be separated most carefully from people in health, and the private doctor must have the duty of doing this; if a poor patient he must be notified and taken to the hospital; if a rich man, a regular typhus isolation room must be made in his house, so that all further spread of the infection may be hindered. In fact, it would be better for people of position to be lodged in separate rooms in these hospitals rather than to run the risk of spreading the infection.
3. In large communities one must see to the separation of the typhus patients from the healthy as soon as possible; jails and reformatories should have their special typhus isolation wards in the vicinity.
4. Care should be taken as to the method of conveying the typhus patient to the hospital, infection is easily spread by the carriages used.
5. The wards and rooms should be very strictly isolated from all others; there should be special doctors, nurses, and priests to attend upon the sick, who should clean themselves most carefully on going out.

He goes on further to say that typhus frequently breaks out in time of war, because soldiers, specially recruits, are in too confined a space; he says that the "field hospitals" should be fixed and treated by the opposing armies as if they were "free states." I am afraid this recommendation will hardly be followed, after our experience of how free states are treated by the coryphæi of modern civilisation.

Measures of Inspection and Disinfection.

In all large cities, especially during the times of epidemics, the tenements of the poorer population, the poorer inns and cheap lodging-houses, all institutions for those who have no homes, workhouses, poorhouses, and prisons should be carefully inspected by the authorities. All ships, and particularly emigrant ships, should be subjected to a careful inspection. Special attention should be devoted to tramps and their lodgings, also taverns, asylums, prisons, and railway stations. Every suspicious case should, if possible, be isolated either on the spot or in the nearest suitable hospital.

The best method of disinfecting bed-linen and outer clothing consists in the use of steam; iron bedsteads, which ought to be of the folding variety, should be exposed to it. Excellent high-pressure steam disinfectors, known as "The Velox," have been made at Stirling by the Grampian Engineering and Motor Company, and some 50 have been sent by the War Office to Serbia. The machine is provided with a vertical tubular boiler specially adapted for burning wood fuel, as coal and oil may often be unobtainable in Serbia. Plates, glasses, spoons, and forks only require washing in hot water, as the contagion does not adhere to objects with a smooth, non-porous surface. It is well always to add some disinfectant to the water used in washing patients after profuse perspiration, but the exact relation of the excretions of the body to the poison of typhus fever is imperfectly known. In disinfecting the wards and rooms which have been occupied by typhus patients one must bear in mind that the disinfection of the ceiling is more important in typhus fever than in many of the other acute infectious diseases. The floor should be carefully scrubbed with soft soap and carbolic acid, special attention being paid to the joints; after that it is rubbed off, waxed, and painted. Immediately after admittance to the hospital the patient should receive a bath and be carefully cleansed; his clothing and underwear should be properly disinfected and kept in large well-ventilated rooms at some distance from the wards until he is discharged. The patient should be dressed in clothing provided by the hospital and strictly isolated. In small towns where no time has been given for preparation, when the first cases are discovered infected material can easily be buried in the open air in some vacant field.

Free ventilation being the most potent method of combating the poison of typhus in the disinfection of wards or sick rooms after the recovery or death of typhus patients, the rooms should not be closed as is the case with other infectious diseases, but they should be kept open for a number of days, well ventilated by throwing open windows and doors.

TREATMENT OF TYPHUS.

Unlike enteric fever, there is not so much that is special to be said about the treatment of typhus. The old methods of blood-letting, emetics, and large doses of quinine, perhaps dating from the time when it was still confused with malarial fever, have long since been abandoned. To quote again from Hildebrand on this point:—

After a dispassionate survey of all these hypothetic methods of treatment, it is noted at once how short-lived they were, how little, therefore, was their true value, and how inadequate they were in practice. We may in the future expect as many more such doctrines and systems of therapeutics as there will be hot-heads and visionaries in our art. But if, on the contrary, we follow the path of observation and successful experience in these cases—in other words, the path of empiricism guided by reason—our free and untrammelled judgment will lead us on to new and better views than can be hoped for from a brain that is ruled by hypotheses.

It need hardly be said that absolute rest in bed is essential; the sick-room should be large and airy, with the windows open night and day; as far as possible the hospital attendants should be individuals who have been rendered immune by an attack of the disease. This practice was followed as far as possible in Serbia, where many of our hospital attendants were Austrian prisoners who had come unscathed through the disease. An important point is that the sick-room should contain only what is indispensable for the care of the patient. Mirrors, conspicuous pictures, wall-paper of glaring design—in fact, any brightly coloured or prominent object should be covered up or removed. Such objects readily feed the morbid imagination of the delirious typhus patient, enter into his hallucinations, aggravate his delirum to the point of mania, and so give rise to incalculable harm. Curschmann mentions a patient who smashed into fragments a mirror that hung opposite his bed, because he mistook his own image for that of an enemy, and another who jumped through the window because he was terrified by a painted head on the side of a porcelain stove, which he though was alive and seemed to him to bear a frightful expression.

Thorough ventilation is really the most important factor in the treatment—not only is it the most efficacious antipyretic, but also it has a very favourable effect upon the nervous system; the violent headache and insomnia of the early stages of the disease are lessened by this method more than by anything else. The intensity of the delirium is diminished and the mental condition of the semi-comatose patient appears to be favourably influenced. During an epidemic which occurred in Paris in 1893, Barrault, a French physician, maintains that he reduced the mortality considerably by an energetic open-air treatment.

Hydrotherapy and Diet.

Hydrotherapy, as in enteric fever, is one of the best methods of reducing the pyrexia and soothing the nervous system. It can be effected either by (1) cold baths, (2) the

local application of cold, or (3) the water mattress, the water of which should be not be below 65°–70° F. The ice cap, or Leiter's tubes, or small pillows filled with iced water may be used to combat the insomnia; sponging several times a day with vinegar and water is very helpful. The baths are particularly useful in stuporous or comatose conditions. They also greatly relieve the violent headache and insomnia of the initial stage. The frequency with which the baths are given should depend less on the amount of the body temperature but more on the condition of the central nervous system, the pulse, and respiration; the actual reduction of the temperature *per se* is not so important. In cases of serious delirium with tremors I have certainly found morphia injections most beneficial in circumstances where, as in Serbia, any form of cold-bath treatment was out of the question. It may also be given without risk to combat the insomnia, which is often a most troublesome symptom.

Diet is a fairly simple matter, as the principles to be observed are the same as for all the specific fevers except enteric fever, which, owing to the ulceration of the intestine, must have special rules of its own. Briefly, then, the diet should be mainly milk, rendered more palatable perhaps by the addition of some mineral water, and this in many cases is all that is necessary; often it may be advisable to give in addition eggs, soups, or beef-tea. There is no absolute objection to giving solid food if the patient's mental condition is such as to admit of his swallowing it, but as a rule he is better without it until the temperature has become normal. After that solid food can always be given at once; the patient may have a ravenous appetite, and there is no objection to its being gratified. After venesection went out of fashion as a method of treating fevers in the main, what is known as the supporting treatment has been generally adopted, and in the case of typhus, which is a most devitalising disease, this seems perfectly sound. But when the expression "supporting treatment" is used it often seems to imply the employment of alcohol. This is not in the least necessary as a routine measure in an uncomplicated case, and in the Balkans there is a strong prejudice against the use of brandy which probably is well founded. In former days heroic doses of alcohol were given by our ancestors, such as the two bottles of madeira daily for several days ordered by Dr. Carmichael Smyth to a Spanish prisoner in the jail at Winchester, or the two bottles of port in 12 hours to another, who recovered. Typhus cases may terminate with sudden heart failure, and when there are signs of failing circulation stimulating remedies, among which alcohol is an important one, should be energetically employed. Apart from possible complications of the respiratory system, one's attention has to be directed mainly to the nervous system, which suffers from the intensity of the toxæmia, and to the heart, which often succumbs to the severity of the disease. At the end of the febrile period, if there are no complications, the convalescence from typhus is usually said to be rapid as compared with other acute infectious diseases, but it was noted that the English who were affected by it were much longer in recovering their strength than the Serbians.

Sanitary Science and Public Health.

Before concluding this course of lectures, founded as they were for the promotion of public health, and perhaps with the idea at the back of Chadwick's mind of the ultimate abolition of the medical profession, I should like to say a few words on the more speculative aspect of the philosophy of public health. So far it would seem that the main triumphs of public health and sanitary work have been in connexion with acute disease, of which typhus is the classic example, and their success in this sphere is all the more astonishing as Great Britain and Ireland were the special homes of typhus prior to the advent of the medical officer of health. The disappearance of cholera, too, of relapsing fever, and the diminution of enteric fever may be set to the credit of advancing sanitary science, and the question arises, How much more progress can be expected in this direction? Are the possibilities of sanitary science exhausted when we have dealt with acute and epidemic disease? It must be patent to anyone who has reflected much on the history of the evolution of medicine that acute diseases were much more prevalent in the ancient world and in more primitive societies, whereas chronic diseases are more conspicuous in the modern world and in more advanced societies. To Plato, as to the ancient world generally, disease was a tiresome and meaningless exception to the ordered regularity of a harmonious life; it was a kind of square root which would not come out, belonging to the realm of τὸ ἀπέραντον, which no philosophic mind would waste time in studying. The ordinary citizen, in this view, ought to be, and indeed probably was, healthy, sane, and strong, and the man who was properly occupied had "no leisure to be ill." It is some confused recognition of this fact which has led men like Tolstoi to rail at doctors and to say that Medicine promotes disease, whereas the truth is that the advances in material civilisation, while diminishing epidemics and acute disease, do certainly seem to increase chronic disease; and so much is this the case that an interesting modern writer—Mr. Edward Carpenter—has written a book in which civilisation itself is regarded as a disease to which all nations fall a prey as they advance in material well-being; hence he called his book "Civilisation, its Cause and Cure." Now, advancing civilisation increases the complexity of the life both of the body and of the mind, so that it becomes more and more difficult to retain the primitive simplicity of our perceptions; into the flamboyant Ionicism of our modern life we require to introduce something of the sobriety of the Dorian mode, and the war brings this very closely home to us with its emphasis upon simplicity and universality. Here it is that the Chadwick school of thought may help us, for it is not merely by the legislature making sundry sanitary enactments that progress is made, but by engraving on the minds of the rising generation various precepts of health, and this can only be done by Education.

To many people sanitary science is apt to appear to be a mere matter of drains and open windows, and the enthusiasm about drains which possessed our fathers of the mid-Victorian epoch is well expressed in Mr. Mallock's parody of Ruskin's style in the New Republic, where Mr. Herbert is made to say: "I think a clean sewer is an entirely holy thing." But sanitation, as Chadwick understood it, goes far beyond the getting rid of epidemics and acute diseases; it endeavours to lay down rules for sound building, and it is not too much to say that the need of rational housing and proper town planning are among the greatest desiderata of all social reforms in this country at the present day. An adequate system of housing both for the country districts and the towns might diminish phthisis at least 50 per cent., and would probably lessen the consumption of alcohol from which flow such unnumbered ills. If the evils connected with these two scourges could be removed, we should have done more than our ancestors accomplished in their banishment of typhus from these islands. But here Sanitary Science must join hands with Education, or, rather, be recognised as being an integral part of it.

Just as a long period of peace may render a nation careless about preparation for war, so long immunity from disease may render a nation careless about its sanitary arrangements. Thus, although we have been free from any serious epidemic for many years, it is necessary for sanitary workers to be ever on the watch, as one never knows when something serious may break out, and particularly when the nation is spending these vast sums of money, roughly at the rate of £1,000,000,000 a year, we must be alive to the danger of local authorities getting into difficulties and relaxing their standard of sanitary effort.

Among the Ancients life was infinitely more simple than with us, but it must be confessed that to some extent the simplicity was purchased by ignoring some awkward facts such as disease and the discomforts of old age; indeed, with regard to the solution of many difficult social problems the ancient world had a genius for cutting knots which the modern world loves to try to untie.

It was said of the late Mr. Gladstone that he took an interest in almost everything except disease; this seems to me to have been a sound and healthy attitude to have taken up, though perhaps not a wholly philosophic one. For disease belongs to the negative things of life, and though it may be less interesting than many other things, it has to be reckoned with. Just as friction interferes with the law of perpetual motion, so disease shackles and restrains the untrammelled activities of our minds and bodies, and is consequently worthy of study even though it constrains us to embark upon that bewildering sea of particulars from which the ancient world in horror shrank.

INTESTINAL DISORDERS ARISING FROM PROTOZOAL INFECTION.* [1]

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THE return to this country of large numbers of invalided soldiers from tropical and subtropical regions has brought to the notice of the clinical pathologist material of a nature such as he has previously rarely, or never, had an opportunity of examining. Many pathologists must be in the same position as myself, and have to decide the character of diseases which they never previously had an opportunity of seeing. The number of cases of amœbic dysentery seen in civilian hospitals in England is so low in times of peace that all of us have not had an opportunity of examining the causative organism in the fresh state. Under these circumstances we owe a debt of gratitude to Dr. H. M. Woodcock and to Dr. C. M. Wenyon for the papers which they have recently published in the *British Medical Journal* and THE LANCET respectively, and which describe and illustrate lucidly the different species of protozoa commonly found in the dejecta of man.

Since undertaking the duties of clinical pathologist to the Royal Herbert Hospital ten months ago I have had three cases showing Entamœba histolytica s. tetragena in the stools and one case with an infection by Lamblia intestinalis. All four cases present features of interest and require no apology for their presentation in the form of a paper. It is not my intention to discuss at length the morphology and biology of Entamœba histolytica and Lamblia intestinalis; these have been so well and clearly described by Wenyon that my non-acquaintance with these protozoa did not debar me from recognising their presence in characteristic form in stools.

CASE 1.—The first case which I saw was one of active dysentery under the charge of Captain (now Major) Starling. It occurred in a Eurasian, a gunner, aged 23 years, who had been born and brought up in India, but, whilst there, never suffered from dysentery. He left Bombay for England for the first time about the end of November, 1914, and was taken ill with diarrhœa about half-way through the Red Sea. He continued to suffer after reaching England, and had frequently to report sick, and on more than one occasion to lie up in hospital. He was admitted to the Royal Herbert Hospital on Sept. 12th, 1915, and was then passing 10 to 20 motions a day. On the 14th I examined his stools and reported amœbæ present, but, not having a warm stage at disposal, and failing to observe ingested red blood cells, the diagnosis of E. histolytica was not made. Three days later I obtained a freshly passed stool for examination. This stool presented large quantities of mucus streaked with blood. A fragment of mucus was teased out in saline on a glass slide and mounted on a warm stage. Examination of this specimen revealed large numbers of amœbæ crawling actively about and throwing out clear pseudopodia with incredible rapidity. Accurate measurement of these active forms was impossible, but they were about 20–30 μ. The whole cytoplasm presented usually a faint greenish tint, and in a few specimens ingested red cells were detected. The relatively small nucleus was also made out in one or two specimens. Permanent preparations were fixed wet in alcohol-ether, alcohol, and formalin vapour, and stained in Giemsa and Heidenhain's iron alum hæmatoxylin. Dr. Woodcock was kind enough to examine these for me, and confirmed my diagnosis of Entamœba histolytica. Immediately these active forms were seen the patient was started on emetine injections. Forty-eight hours later he passed the first formed stool he had had for six months. After 12 grs. of emetine had been given the case was cured and left hospital on Oct. 5th, with strict injunctions to report to us should the slightest symptoms reappear. He has not been heard from since.

At the time I had this case under observation I was unaware of the fact that Schaudinn's description of the division forms of Entamœba histolytica was incorrect. It was later when I knew from Dr. Wenyon that the cystic forms of this parasite present characteristic and readily recognised forms—viz., circular outline, 10–14 μ in diameter, and with four daughter nuclei distributed in the cytoplasm. The stools from the above case were examined after emetine treatment had been started, but observation was especially directed to the detection of active forms, and these were not found.

The next case in which E. histolytica was found presented a very different character, but belongs to a type which it is extremely important to recognise, in view of the danger of spreading amœbic dysentery in the troops in this country and across the Channel. This was a case of true amœbic dysentery, which had passed the acute stage undetected, and had for months been harbouring the organism unsuspected.

CASE 2.—Lieutenant —— was admitted to the Royal Herbert Hospital on Dec. 6th, 1915, as he had been suffering from fever for ten days. His liver was enlarged and tender, with resistance over the gall-bladder. As he gave a history of having had typhoid fever in South Africa 18 months previously his excreta were examined bacteriologically, but the test was negative. On Dec. 14th, I saw the patient for the first time, and carried out a leucocyte count which came out at 15,000. A differential count especially directed towards the detection of an eosinophilia showed no abnormal feature. Three days later the patient's general condition was improved, and his leucocyte count was down to 14,000. Further cross-examination of the patient, however, brought to light a new and an important diagnostic factor. During April, May, and the first half of June he had had a colitis in South-West Africa. This colitis he described as being severe; diarrhœa and passing of mucus tinged with blood. During the acute stage the motions were as frequent as twice an hour. No injections had been given to him, but he gradually recovered. The diagnosis of his present condition being now probable a saline purge was given, and the resulting motion was examined on Dec. 19th. A small particle of mucus adhering to the outer surface of the firm brown stool was teased out in Gram's iodine solution (double strength) and examined under an oil-immersion lens. Numerous encysted forms of Entamœba histolytica were seen, presenting the four characteristic nuclei, and measuring on an average 12 μ in diameter. Emetine, $\frac{1}{3}$ gr. t.d.s., was given hypodermically on 12 successive days. The stools were examined again on Dec. 29th, but no E. histolytica was found. A typical cyst of E. coli, however, was present, showing the eight daughter nuclei quite distinctly. It was circular in outline, and measured 22 μ in diameter. The patient felt so fit after the course of treatment that he was discharged to duty at his own request on the 31st. He has been advised to have his stools examined once a month, for three or four months, and to report at once on the reappearance of any symptoms.

CASE 3.—The third case in which I found the pathogenic amœba was that of an officer in the Royal Army Medical Corps who contracted the disease in Egypt about the beginning of April, 1915. After a week of constipation severe diarrhœa started, accompanied by griping and tenesmus. The stools contained mucus streaked with blood, and for three or four days were passed 10 to 20 times per diem. Later this settled down to three or four motions a day, but mucus and streaks of blood still persisted. The sole treatment adopted was the use of astringents. This chronic state lasted for three or four months, with occasional exacerbations, accompanied by vomiting and a rise of temperature to 102° F. For four months a formed motion was not passed. Admitted to hospital in Alexandria on July 22nd, he received 40 injections of emetine, 20 grains in all. The diarrhœa stopped after three days, and in a week a formed motion was passed, although mucus was still present. He returned to England on August 23rd, and was then quite well, excepting that the bowels moved twice a day and there was present a trace of mucus in the stools. After a month's leave he returned to light duty, but still suffered occasional mild exacerbations with three to four stools a day, when a little mucus was passed, but no blood.

On Jan. 5th, 1916, I examined a motion obtained after a saline purge and found numerous encysted forms of Entamœba histolytica, there being two or more present in each field of the oil-immersion lens. The large majority of these were of the immature type, and presented only two nuclei, or in some cases three. Several of the binuclear forms were measured and found to be only 9 μ in diameter. Further search soon revealed larger forms, 13 μ in diameter, which contained four characteristic nuclei; and it was only when these were demonstrated that the patient, himself a microscopist, was reluctantly compelled to acknowledge the certainty of the diagnosis. Emetine injections, 1 grain per diem for 12 days, were started on Jan. 7th. Three days later the number of amœbæ present was greatly reduced, this reduction affecting especially the immature binuclear forms, but a careful enumeration of mature and immature forms was not done. Four days later amœbæ were still present,

* In the carrying out of such research work as I have been able to undertake I have been greatly helped by a grant in aid from the Medical Research Committee of the National Health Insurance.

[1] This paper was received on Jan. 30th last, but pressure on our space has prevented its earlier publication.—ED. L.

but only two or three were present in each preparation. After six days of emetine treatment the stool resulting from a saline purge was examined, and this time a careful search failed to detect any amœbæ. The patient declared he felt very much improved in general condition, despite the insomnia due to the emetine. Up to date there has been no reappearance of the organism in the stools.

CASE 4.—The fourth and last case of protozoal infection to be described constitutes an interesting commentary upon the three genuine amœbic dysenteries given above. Here, as in Case 3, the value of the anamnesis is enhanced greatly by the circumstance that the patient was a medical man, a student of medicine holding a combatant commission. Lieutenant ——, aged 23, was quite well until the beginning of August, 1915, when the ship, on board which he was proceeding East, called at Malta. He went ashore in the afternoon, but whilst on land can recollect having taken only one glass of lemonade. The evening of the same day he was seized with abdominal pain and severe diarrhœa, which lasted 24 hours. Nothing further noticed until seven days later and four days after landing in Egypt, when the diarrhœa recommenced and gradually got worse. He was passing four to six stools a day; these were very loose and watery, but never showed blood or mucus. He was admitted to hospital on August 8th, 1915, at which time the motions were 10 to 15 a day, but rarely disturbed him at night. In hospital he received 41 injections of emetine over a period of three weeks, but the diarrhœa did not stop, and he felt rather worse. The cessation of injections was followed by some improvement and he returned to duty. The diarrhœa, however, continued and he became weaker, and was finally invalided home on Oct. 23rd, 1915. The diarrhœa ceased on the way home and, apart from the effect of a mild dietetic indiscretion, he has been in good health since. He was admitted for observation to the Royal Herbert Hospital on Jan. 2nd, 1916. On the 7th a stool, the result of the administration of a saline purge, was submitted to an examination for amœbæ, and presented the following characters: Light brown semi-fluid motion; no foul odour; free from blood and mucus. A small loopful of the more fluid part was rubbed up in a drop of iodine solution, mounted, and examined with an oil immersion. No active or encysted forms of amœbæ were to be seen, but each microscopic field showed numerous cysts of Lamblia intestinalis. These were oval bodies measuring 14 μ long and 10 μ broad, surrounded by a bright refractile capsule. In Dr. Wenyon's paper on p. 1181 Figs. 5 to 8 illustrate the appearances seen. In the specimens examined from the case under discussion the capsule was more distinct than in the illustrations just noted, and at first sight suggested rather that one had to deal with the ova of a metazoon. Their size, however, the presence in several of a well-marked oblique line separating the two daughters, the two or four polar nuclei according to the stage of development, all presented a picture which, once observed, could never again be mistaken. Permanent preparations were made and stained. They confirmed and amplified the observations made on the fresh specimens.

Where the patient contracted the infection cannot be placed with certainty, but it is most probable that the Lamblia obtained entrance into his alimentary tract immediately on his arrival in Egypt. Whether he had ever had a true amœbic dysentery is more than doubtful. The failure to react to emetine, the spontaneous recovery from the diarrhœa after reaching cooler latitudes, and the subsequent establishment of a lamblial infection all render it more than probable that his whole disorder was due not to E. histolytica, but to Lamblia intestinalis. Without straining unduly, the clinical history, as given by the patient, can only be interpreted as pointing towards the accuracy of this view; most certainly it does not accord with the symptomatology of an acute amœbic dysentery.

This case is now being treated with thymol in the hope that the infection may be suppressed or abolished, but at present the therapeutic treatment of this lamblial infection is very unsatisfactory and requires further research. In this connexion the following experiment which I undertook is of interest, and may prove to be of considerable importance.

To obtain, if possible, confirmatory evidence of the conversion of the encysted form into the free swimming flounder-like active form, animal experiment was resorted to. A loopful of the fluid part of the stool (which had now stood two days at room temperature) was rubbed up in about 5 c.c. of milk. By means of a pipette and teat some of the milk was introduced into the pharynx of three mice, two of whom took it readily. Three days later one of these mice was killed, and the contents of the bowel examined at various levels. Down to 2 inches below the pylorus numerous freely swimming typical lambliæ were found. These were 14 μ long and had the typical structure. In the lower part of the bowel these were absent, and the few cystic forms seen and measured were about 10 to 12 μ long. The two inoculated mice remaining were then sacrificed and examined, but only a negative result was obtained. Three control mice living under identical conditions, but which had not been fed on the lamblia-containing fluid, were also killed and examined without result. Perhaps I was too precipitate in sacrificing the infected mice, and had the infection been allowed to run on longer it is possible all would have contained active lambliæ in the upper bowel. It cannot be regarded as an established fact that I infected the first mouse with the protozoon in question; the possibility of a spontaneous infection must be taken into consideration. Still, given two dozen mice, encysted lambliæ, and ten hours microscopy, and the question can be decided within a week. Should the result be regularly positive, ideal conditions are at once granted for the testing of various compounds with the view of finding a therapeutic agent resembling in efficacy that of emetine against E. histolytica.[2]

The three cases of amœbic dysentery described above require little comment. Diagnose the condition and give emetine. The third case, however, is of some interest. Two courses of treatment by emetine failed to prevent the establishment of a chronic dysentery. Alternative views to explain this phenomenon are, first, an anatomical, and secondly, a biological. It is possible to conceive a few amœbic cysts locked up in a fragment of more or less dried intestinal content, perhaps lodged in a crypt where the emetine could not obtain access. Another possibility remains to be considered. It is a well-established fact that certain trypanosomes, easily killed by a particular organic compound of arsenic, may after exposure to this drug under conditions not exactly determined become insusceptible to the action of this very arsenical compound. This insusceptibility or arsenic-fastness remains a character of a trypanosome through subsequent generations. In the third case the dysentery relapsed after prolonged treatment with emetine, and the conditions for the establishment of an emetine-fast amœba were presented. Fortunately, however, the cause of the relapse did not lie in the presence of a permanently emetine-fast amœba. The whole question why certain cases relapse is one urgently demanding further research.

In conclusion, the problem for the clinical pathologist is to recognise the causative organisms in the stools. Accurate measurements must be made of these by a micrometer eyepiece, whose value has been reckoned out for the various objectives by means of a ruled slide. For the study of active amœbæ from an acute case of dysentery a warm stage is indispensable. In detecting the encysted forms of E. histolytica double strength iodine solution, recommended to me by Dr. Wenyon, has proved of great service. The solution is made up similarly to Gram's solution, only double quantities of iodine and potassium iodine are measured out. A small particle of the stool is teased out in a drop of this solution on a glass slide, covered with a glass slip, and examined by a weak diffuse light under the oil immersion. The nuclei of the amœbæ stand out distinctly, and the central dot (karyosome) can usually be made out.

For further cytological study and the permanent preservation of interesting specimens, the following technique has given excellent results in my hands. A very thin film is made on a slide which before drying is immersed in corrosive sublimate-alcohol solution (one part of 6 per cent. watery corrosive sublimate to two parts of absolute alcohol). The slides are left in this over night, then washed in alcohol of decreasing strengths, and finally in distilled water. For staining Heidenhain's iron-alum hæmatoxylin or Giemsa solution may be used. The latter is the more universally obtainable stain and gives excellent results with amœbæ. To a watch-glass filled with distilled water add the Giemsa solution drop by drop, one drop of stain to each cubic centimetre of water, and invert the film over the staining solution. After an hour the preparation is washed in distilled water for a few minutes, then run rapidly through alcohol into xylol, and mounted in neutral balsam. The Giemsa stain which I have at present colours the

[2] This experiment has since been performed and the possibility of the experimental infection of mice placed beyond doubt.

amœbæ a delicate rose-pink, which enables them to be readily picked out from the generally purple background. The deeper red nuclei stand out very distinctly, and the rod structure present in the cytoplasm is stained a deep purple. The amount of shrinkage obtained in using the above fixative is very slight; quadrinuclear cysts have, when measured in the stained preparations, been found to be 12 μ in diameter, whilst the rod structure attained a length of 6 μ.

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LAMBLIA INTESTINALIS INFECTIONS FROM GALLIPOLI.

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THE bacteriological supervision of convalescents from enteric fever and paratyphoid fever, as insisted upon by the War Office, while entailing a vast amount of work on a scale hitherto not attempted, has afforded the bacteriologist an opportunity of studying several interesting conditions. For some months we have been engaged in this work, and as a matter of routine we have extended our investigations to include all cases of "dysentery." It is to certain of the latter cases that we propose to confine our present paper. It seems to us that the term "dysentery" has been fairly freely applied to most of the cases of diarrhœa sent home from the Near East, apart altogether from the question whether the condition be due to a pathogenic organism or to some other irritant.

In the course of an investigation of 136 consecutive cases of "dysentery" invalided home from Gallipoli we have met with 12 cases in which the bacteriological findings and the history suggest that the condition was dependent upon infection by Lamblia intestinalis. We have found no difficulty in recognising this flagellate, as in the majority of our cases it was present in the fæces in considerable numbers and is quite characteristic in appearance. We need not enter into a description of its characteristics, as this has already been done quite recently by Wenyon[1] and by Woodcock,[2] and anyone accustomed to microscopy who read their articles will easily recognise the parasite. In our microscopy of the fæces we have found emulsifying them with double-strength Gram's iodine, as recommended by Wenyon, most useful for bringing out the encysted forms of the protozoa and staining their nuclei, and so aiding in their identification.

The pathogenicity of Lamblia intestinalis is a question which is still not beyond the regions of doubt, hence it is only by the detailed study of series of cases like the present that the matter can be finally settled one way or the other. Within recent years several observers have recorded cases apparently of lamblia infection giving rise to a chronic dysenteric condition which resisted all the usual methods of treatment. Wenyon[3] has had under observation two or three persons who have maintained their infection for years. Some showed repeated attacks of diarrhœa with passage of mucus, and one case, although passing lamblia in large numbers, showed no signs of intestinal derangement. The persistence of the infection is well illustrated in our series.

CASE 1.—The patient, aged 32, went direct from New Zealand to Egypt and was stationed at Cairo for five months before proceeding to the Peninsula. He enjoyed good health while in Egypt, and left at the beginning of April, 1915, for "Anzac" where he landed on April 25th. On the voyage across the Mediterranean the ship called only at Lemnos, where the patient went ashore for an hour or two. He was six months at "Anzac" before being taken ill. When the "dysentery" attacked him the symptoms were severe, frequently 30 motions per day, chiefly blood and mucus being passed. These were associated with tenesmus and colicky pains in the abdomen. Five days after the onset of the illness he was sent straight back to England, where he arrived at the Brook War Hospital on Nov. 9th, 1915. He received six emetine injections while on the Peninsula and two while on the hospital ship. He thinks that these injections diminished the blood in the motions but had no effect on the mucus, which continued to be passed in considerable amount until he reached this country. Since arriving here his condition has slowly improved, but he still passes a little mucus in the motions. He has had no fever since admission to hospital here.

The excreta were examined at the Addington Park Laboratory on Dec. 15th, 1915, and again on the 24th, and found negative on each occasion. The fæces and urine were sent to us for examination on Jan. 4th, 1916, and again on the 10th. We failed to isolate any typhoid, paratyphoid, or dysentery bacilli, but large numbers of encysted Lamblia intestinalis were seen on microscopical examination of the fæces. No entamœbæ were found. On the 21st we tested the agglutination reaction of the patient's serum, in 1 in 50 and 1 in 100 dilutions, against the three known strains of dysentery bacilli—Flexner, "Y," and Shiga—with negative results in all cases.

CASE 2.—The patient, aged 21, went from England to Gallipoli via Alexandria, where he stayed two days, and Lemnos, where he remained for a day and a half. He was in good health, and he landed on "Y" beach on June 15th, 1915. On July 17th the diarrhœa commenced; it was associated with colicky pains in the abdomen, and blood and mucus were passed with every motion. The diarrhœa was severe day and night, so that some nights he even slept at the latrines. He did not report sick until about the end of July. He was given seven injections of emetine, but he states that they did no good whatever, and he was put on light duty. He continued on light duty till Sept. 23rd, when, as there was no improvement in his condition, he was sent direct home. He was very ill while on the ship, the diarrhœa being continuous. He had no further emetine injections. Arriving at Clandon Park Hospital, Guildford, about the beginning of October, he was transferred to the Brook War Hospital on the 18th. The diarrhœa continued while at Clandon, six or seven motions per day, associated with the passage of blood and mucus, and when he was transferred to the Brook Hospital he was passing up to five motions per day. By Jan. 20th, 1916, he was much improved, although passing three motions per day, but there was no blood or mucus. He finds, however, that if he takes any hot food, particularly hot fluid—e.g., tea—it brings on one or two loose motions almost immediately. He has consequently to be careful with his diet. He has had no fever since admission to the Brook Hospital.

The excreta were examined at the Addington Park Laboratory on Dec. 15th, 1915, and found negative. The fæces and urine were sent to us on Jan. 10th, 1916, and, failing to isolate any typhoid, paratyphoid, or dysentery bacilli, we found encysted forms of Lamblia intestinalis in the fæces in considerable numbers, but no Entamœbæ histolyticæ. On the 21st we examined the agglutination reaction of the patient's serum (1/50 and 1/100 dilutions) with the three known dysentery bacilli—Flexner, "Y," and Shiga—and obtained negative results in all cases.

CASE 3.—The patient, aged 25, went from this country to Gallipoli via Alexandria, at which place he was ashore for one day only. Landing at Suvla Bay on August 12th, 1915, he was quite well until about Sept. 25th, when the illness began with loss of appetite, and, shortly thereafter, diarrhœa. At first he had about five motions per day, but about two weeks later the diarrhœa got worse and blood and mucus were habitually passed. He, however, kept on duty until Oct. 21st, and on the 23rd he left the Peninsula for home. The diarrhœa continued all the way home, about four motions per day, frequently with blood and mucus. He was admitted to the Brook War Hospital on Nov. 9th, and he looked ill and was very thin. He gradually improved, and by Jan. 19th, 1916, he was passing only two motions per day, which, however, were loose, but contained neither blood nor mucus. He had some fever during the first week after admission to the Brook Hospital, but none since. He had one injection of emetine in Gallipoli, which had no effect on his condition, but none since. He has been treated with cyllin capsules (mⱡiii.) in Brook Hospital.

The fæces and urine were sent to us for bacteriological examination on Jan. 12th, and we found encysted forms of Lamblia intestinalis in large numbers, but failed to recover any typhoid, paratyphoid, or dysentery bacilli. No entamœbæ were discovered. We tested the agglutination reaction of the patient's serum (1/50 and 1/100 dilutions) on the 21st with the three known dysentery bacilli—Flexner, "Y," and Shiga—with uniformly negative results.

CASE 4.—The patient, aged 31, went from Australia to Egypt (Heliopolis), where he remained two weeks and enjoyed good health. He was transferred to Gallipoli and

[1] THE LANCET, Nov. 27th, 1915, p. 1178.
[2] Brit. Med. Jour., Nov. 13th, 1915.
[3] THE LANCET, Nov. 27th, 1915, p. 1178.

landed at "Anzac" on August 15th, 1915. Diarrhœa commenced on the day after landing. He had five or six motions per day during the first week of illness, and from 20 to 30 motions per day during the second week; blood and mucus were continually passed, and sickness and vomiting were troublesome. Notwithstanding the diarrhœa he kept on duty, with the exception of one day, until about Sept. 14th, when he was sent to Mudros. He was six weeks in hospital in Mudros, the diarrhœa continuing, with passage of blood and mucus most of the time. From Mudros he came direct to England, and was admitted to the Brook War Hospital on Dec. 4th, 1915. His condition greatly improved on the ship, and the diarrhœa stopped shortly after embarkation. During the last fortnight of December he had a recurrence of the diarrhœa, but has remained well since. He received two injections of emetine in Gallipoli and ten injections on the way to Mudros. For three or four days only after the ten injections the diarrhœa was greatly improved, but recurred at Mudros. He has had no further emetine treatment.

The fæces and urine were sent to us for bacteriological examination on Jan. 21st, 1916. We were unable to isolate any typhoid, paratyphoid, or dysentery bacilli, but found considerable numbers of the encysted forms of Lamblia intestinalis in the fæces; no entamœbæ were seen. Agglutination reaction of the patient's serum (1/50 and 1/100 dilutions) with the three known dysentery bacilli—Flexner, "Y," and Shiga—on this date gave negative result throughout.

CASE 5.—The patient, aged 20, went direct from this country to Gallipoli and landed at Suvla Bay about the first week of August, 1915. Three to four weeks after landing diarrhœa commenced, 12 and more motions per day, associated with the passage of blood and mucus; his condition got worse, 20 to 30 motions being passed daily, with sickness and vomiting. After two months' illness he was sent direct to England, arriving at the Brook War Hospital on Nov. 8th, 1915. His condition has slowly improved, but by Jan. 20th, 1916, he was still passing two loose motions per day. He has to be careful with his diet, too; hot fluids tend to start the diarrhœa, and fruit will set it up about two days. There has been no fever since admission to the Brook Hospital. The patient has never had any emetine.

An examination of the excreta by us on Jan. 13th showed the presence of numerous cysts of Lamblia intestinalis in the fæces, but no Entamœbæ histolyticæ, and we did not recover any typhoid, paratyphoid, or dysentery bacilli. A previous examination on Dec. 29th at the Addington Park Laboratory was negative. Agglutination reaction of the patient's serum (1/50 and 1/100 dilutions) with the three known dysentery bacilli—Flexner, "Y," and Shiga—was done on Jan. 21st and found negative.

CASE 6.—The patient, aged 20, arrived at Suvla Bay about the first week of August, 1915, direct from this country. A week after landing diarrhœa began with six or seven motions per day, associated with passage of blood and mucus; the diarrhœa increased in severity, and he had considerable vomiting and pains in the abdomen. He kept on duty, however, for a month longer, when he was sent to a rest camp for five days. There was little or no improvement in his condition, the diarrhœa persisting, with passage of blood and mucus, but nevertheless he resumed duty. His condition got still worse and on Oct. 23rd he was carried from the trenches to the ship and he left direct for England. The diarrhœa continued while on the ship and he arrived at the Brook War Hospital on Nov. 9th. Since admission to hospital he has slowly improved, but by Jan. 19th, 1916, there was still looseness of the bowels, four motions per day, and still occasional abdominal pain. He had considerable fever on the ship, necessitating cold sponging, and for the first ten days after admission to hospital in this country he had moderate fever, but there has been none since. The patient had one emetine injection on the ship and one injection after admission to the Brook Hospital, but none at any other time.

The fæces and urine were sent to us for bacteriological examination on Jan. 14th. We did not recover any typhoid, paratyphoid, or dysentery bacilli, but found numerous encysted forms of Lamblia intestinalis in the fæces and no entamœbæ. The agglutination reaction of the patient's serum (1/50 and 1/100 dilutions) with the three known dysentery bacilli—Flexner, "Y," and Shiga—was done on the 21st and gave negative result in all cases.

CASE 7.—The patient, aged 32, arrived at Alexandria from England and remained there for one month before being transferred to Gallipoli. Landing at "Y" beach, west of Krithia, on April 25th, 1915, he was quite well until about three months later. Diarrhœa set in, with eight or nine motions per day, associated with the passage of blood and mucus and colicky pains in the abdomen. He did not report sick and left the Peninsula with his regiment for four days' rest in camp at Lemnos. The diarrhœa persisted, yet he returned to Gallipoli, where he remained till Sept. 19th. He was compelled to report sick on this date, as the diarrhœa was so bad, from 20 to 30 motions daily, with blood and mucus habitually. He was sent direct to England, and arrived at Clandon Park Hospital in the first week of October, where he remained until the 18th, when he was transferred to the Brook War Hospital. On the ship the diarrhœa was almost continuous, but when in Clandon it had become reduced to three or four motions daily with only a little blood and no mucus. He has had no diarrhœa since admission to the Brook Hospital, but if he drinks anything hot then he has a loose motion almost immediately. There has been no fever since admission to the Brook Hospital. He received an injection of "serum" for his dysentery while on the hospital ship, but is not aware of having had any emetine.

The excreta were examined at the R.A.M.C. Laboratory, Millbank, on Dec. 8th, 1915, and found negative, and again at the Addington Park Laboratory, on the 15th, with similar result. The fæces and urine were sent to us on Jan. 17th, 1916, for bacteriological examination. We did not recover any typhoid, paratyphoid, or dysentery bacilli, but found encysted forms of Lamblia intestinalis in the fæces and no entamœbæ. The agglutination reaction of the patient's serum (1/50 and 1/100 dilutions) with the three known dysentery bacilli—Flexner, "Y," and Shiga—on the 21st gave uniformly negative results.

CASE 8.—The patient, aged 18, went from Australia to Egypt and was stationed at Cairo for nine weeks. After a month in Egypt he had a slight attack of diarrhœa lasting a week, but did not pass blood or mucus, and recovery was complete. Going to Gallipoli, he landed at "Anzac" on August 20th, 1915, and on the 28th he was taken ill with diarrhœa, which gradually got worse. By the end of a week he was passing five motions per day, each containing blood and mucus, and he suffered from headaches and abdominal pains, with much flatulence but no vomiting. He remained on duty till Oct. 23rd, when he was sent back direct to England. The diarrhœa continued while on the ship, although the passage of blood diminished and eventually ceased, but mucus continued to be passed for a long time. He arrived at the Brook War Hospital on Nov. 9th and the diarrhœa ceased two weeks later. He has had no fever since admission to the Brook Hospital, and by Jan. 19th, 1916, he was feeling very fit. He had five injections of emetine while in Gallipoli with practically no effect on the diarrhœa, and has had no emetine since.

On Jan. 17th we made an examination of the fæces and urine, but no typhoid, paratyphoid, or dysentery bacilli were found. Encysted forms of Lamblia intestinalis, however, were present in the fæces in considerable numbers, but no entamœbæ were discovered. On the 21st the patient's serum (1/50 and 1/100 dilutions) gave negative agglutination reaction with the three known dysentery bacilli—Flexner, "Y," and Shiga.

CASE 9.—The patient, aged 23, went from Australia to Cairo for six weeks and enjoyed good health there. From Cairo he arrived at "Anzac" about the middle of May, 1915, and was four months on the Peninsula before being taken ill. Diarrhœa set in, 17 to 20 motions per day, with passage of blood and mucus, but he did not report sick until two weeks later. He was sent to Lemnos, and was in hospital there for two months, the diarrhœa continuing, 12 to 15 motions daily with blood and mucus, associated with sickness and vomiting and abdominal pains. From Lemnos he was sent direct to England, and he improved considerably on the ship. Arriving at the Brook War Hospital on Dec. 5th he was passing about three motions per day. He made further progress, and by Jan. 21st, 1916, was passing only one or two motions per day; these were fairly well formed but still contained a little mucus. There has been no fever since admission to the Brook Hospital. The patient received six injections of emetine at Lemnos and one injection on the ship, but with little effect on the diarrhœa; two injections of emetine were also given shortly after admission to the Brook Hospital.

On Jan. 19th we examined the fæces and urine and failed to find any typhoid, paratyphoid, or dysentery bacilli. Microscopical examination of the fæces showed numerous encysted forms of Lamblia intestinalis but no entamœbæ. On the 21st we tested the agglutination reaction of the patient's serum (1/50 and 1/100 dilutions) with the three known dysentery bacilli—Flexner, "Y," and Shiga—and found it negative in all cases.

CASE 10.—Going direct from England to Gallipoli the patient, aged 23, landed at "Anzac" about the second week of September, 1915. Three weeks after landing diarrhœa started, 12 to 14 motions per day, with passage of blood and mucus. After two weeks' illness he was sent direct back to England, and arrived at the Brook War Hospital on Nov. 8th. On the ship he was having about eight motions per day, with blood and mucus present, but two weeks after arrival in this country the diarrhœa greatly improved. By Jan. 21st, 1916, he was passing only two loose motions per day, and no blood had been passed for nearly a month previously. Since

admission to the Brook Hospital there has always been a tendency to a subfebrile temperature, and by Jan. 21st the patient did not feel too strong, and hot drinks—e.g., tea—had a tendency to start the diarrhœa which would last for a day. The patient states that he never had any emetine.

The excreta were examined at the Addington Park Laboratory on Dec. 29th and found negative. On examination of the fæces and urine on Jan. 19th we failed to isolate any typhoid, paratyphoid, or dysentery bacilli, but numerous encysted forms of Lamblia intestinalis were found on microscopical examination of the fæces; no entamœbæ were found. The patient's serum (1/50 and 1/100 dilutions) examined by us on the 21st gave negative agglutination reaction with the three known dysentery bacilli—Flexner, "Y," and Shiga.

CASE 11.—The patient, aged 21, went direct from England to Suvla Bay, landing about August 8th, 1915. On Oct. 18th he was seized with diarrhœa, which was almost continuous day and night, and was accompanied by the passage of blood and mucus. He also suffered from headaches and abdominal pains. A week after the onset he was sent direct to England, arriving at the Brook War Hospital on Nov. 9th. The diarrhœa persisted on the ship and was present on arrival in this country, and only lessened about Christmas time. He gradually improved and by Jan. 21st, 1916, was passing only one or two motions daily and no blood or mucus. If he takes anything hot, however, then he has one or two loose motions shortly thereafter. He has had no fever since admission to the Brook Hospital. He states that he received five hypodermic injections (probably emetine) on the ship, but none since.

The fæces and urine were examined by us on Jan. 20th, but no typhoid, paratyphoid, or dysentery bacilli were isolated. Encysted forms of Lamblia intestinalis, however, were found in large numbers in the fæces, but no entamœbæ. On the 21st the agglutination reaction of the patient's serum (1/50 and 1/100 dilutions) with the three known dysentery bacilli—Flexner, "Y," and Shiga—was found negative.

CASE 12.—From England the patient, aged 27, went direct to Mudros. After four days there, during which time he was quite well, he sailed for Gallipoli, and landed at "Gully" beach in September, 1915. Seven weeks after landing the dysentery started. It was of a severe type, almost continuous diarrhœa with passage of blood and mucus; yet he remained on duty for two weeks longer before reporting sick. After three days at a dressing station on the Peninsula he was sent direct to Alexandria. After arrival in Alexandria he remained in hospital there for six weeks before embarking for England; he was very ill with considerable fever and dilirium. The diarrhœa, however, improved towards the end of his residence there and before he left he was passing about two motions per day. Two weeks before leaving Egypt his condition was complicated by the development of neuritis in both legs. Coming to this country he arrived in the Brook War Hospital on Dec. 4th. Apart from the incapacity consequent upon the neuritis he was fairly well, passing one or two motions per day with no blood or mucus. During the third week, and again at the end of the fourth week after admission to the Brook Hospital, his temperature showed a subfebrile tendency. The patient had in all 36 injections of emetine—16 on the ship going to Alexandria and 20 in Alexandria. He states that he might possibly have been free from diarrhœa for about half a day after each injection but otherwise he thinks it had little effect.

On examination of the fæces and urine on Jan. 14th, 1916, we were unable to recover any typhoid, paratyphoid, or dysentery bacilli, but microscopical examination of the fæces showed numerous encysted forms of Lamblia intestinalis. No entamœbæ were found. On Jan. 25th we tested the agglutination reaction of the patient's serum (1/50 and 1/100 dilutions) with the three known strains of dysentery bacilli—Flexner, "Y," and Shiga—and found a negative result in all cases.

Reviewing this series of cases we find several features worthy of note. All the cases presented a dysenteric type of diarrhœa, with passage of blood and mucus of a considerable degree of severity, and usually associated with abdominal pains. Infection occurred on the Peninsula at varying intervals of time, from one day to six months after landing. Several of the men, although suffering severely from the diarrhœa, kept on duty for one or two months before going off sick.

The long duration of the condition is another point worthy of special mention. The acute symptoms - diarrhœa with blood and mucus—varied from about one month to nearly six months. Four cases had acute symptoms from one month to a month and a half, and 6 cases from two to two and a half months.

The tendency of all the cases to show spontaneous improvement only upon change to a cooler climate is another remarkable feature. Three of the cases showed improvement on board the hospital ship conveying them to this country, one improved in hospital in Alexandria, but the remainder only made undoubted progress after landing in England.

Encysted forms of Lamblia intestinalis were found in the fæces at intervals varying from about three to six months after the onset of infection, and they were present in large numbers. No active forms were met with, but it must be remembered that we did not have the opportunity of examining a diarrhœic motion.

In 9 of the cases emetine was given hypodermically with little or no effect on the condition, and this in itself rather suggests some other cause for the diarrhœa than entamœba histolytica. Further, in none of the cases did we find any entamœbæ histolyticæ in the fæces. We failed to recover any typhoid, paratyphoid, or dysentery bacilli from the excreta of any case, and in no case did the patient's serum agglutinate known dysentery bacilli, the three strains Flexner, "Y," and Shiga being used against the serum diluted 1 in 50 and 1 in 100.

All the patients had previously been inoculated against enteric fever.

The problem presenting itself is that of the pathogenicity of Lamblia intestinalis. We do not propose to make any dogmatic statement on the subject; under the circumstances such is not possible, and we content ourselves simply by placing the facts of the cases on record. The question whether there may not have been a primary amœbic dysentery with lamblia infection superadded is one that we are not in a position to answer with certainty. Such a double infection would be quite in accord with the apparent failure of the emetine treatment. Bacteriological examination of the cases both in the earlier and later stages of the illness would probably settle this point, and so for the present we must await the publication of reports from those investigators who have had the opportunity of so examining them. A possible primary infection with bacillary dysentery is not likely, since no positive agglutination was got with any of the patients' sera and known dysentery bacilli.

The length of time during which the encysted forms of Lamblia intestinalis were excreted is a very important point, for if the organism be pathogenic, then the question of dealing with carriers will naturally come up for solution. That they are by no means uncommon is shown by the frequency in our series—12 cases out of a consecutive series of 136 so-called dysenteries, which is approximately 9 per cent.

Stitt recognises the prevalence of this infection in the tropics, and holds that it is only less important than that of amœbic dysentery.

REMARKS ON

THE NATURE AND DISTRIBUTION OF THE PARASITES OBSERVED IN THE STOOLS OF 1305 DYSENTERIC PATIENTS.

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DURING the period Jan. 21st to April 18th, 1916, I have been able to take an active share in and to supervise the examination of about 3800 stools coming from 1305 British soldiers in various hospitals in the Western Command. The distribution of the parasites is not without interest, and a short account of the results obtained is now given. Most of the patients were relatively convalescent, having previously contracted dysentery chiefly in Gallipoli. A few cases came from the Western front in Flanders. The parasites found were chiefly protozoa and Blastocystis enterocola. The essential features of many of the organisms were described by Fantham and Porter[1] in 1915. A few eggs and embryos of helminthes occurred. Bacteria were not investigated. The parasites observed in fresh preparations are listed in the

[1] Fantham, H. B. and Porter, A. (1915): Notes on Certain Protozoa which may be Found in Cases of Dysentery from the Mediterranean War Zone, Proc. Cambr. Philosoph. Soc., vol. xviii., pp. 184-188.

following table, which also shows their differential distribution :—

No. of patients			1291
,, ,, in whom parasites were found			446
Total number of examinations made			3325
No. of examinations in which Entamœba histolytica occurred ...			38
,, ,,	Entamœba coli ,, ...		211
,, ,,	Noc's entamœba ,, ...		2
,, ,,	Amœba (Vahlkampfia) limax occurred		2
,, ,,	Giardia (Lamblia) intestinalis ,,		471
,, ,,	Trichomonas hominis ,,		2
,, ,,	Chilomastix (Tetramitus) mesnili occurred		1
,, ,,	Cercomonas parva occurred...		2
,, ,,	Coccidia (apparently Isospora type) occurred		4
,, ,,	Spirochætes occurred		42
,, ,,	Blastocystis enterocola occurred ...		198
,, ,,	Tænia embryos ,, ...		1
,, ,,	Hymenolepis embryos ,, ...		1
,, ,,	Trichocephalus eggs ,, ...		3

The proportion of examinations positive for E. histolytica is somewhat low on account of the relatively large number of injections of emetine received by the men before reaching England, some patients having had as many as 40 injections. It will also be seen that the high proportion of examinations showing lamblia is evidence that injections of emetine have apparently little action on these flagellates, many of the lamblia cases having been previously treated with the drug. Administration of emetine by the mouth might perhaps be more efficacious in some cases. The proportion of stools showing spirochætes, of the type S. eurygyrata, Werner emend. Fantham, is really much higher than appears in the table, as was found by making stained preparations of some of the stools and by using dark-ground illumination. It is of interest to note that at least one case of lamblial diarrhœa and one case of amœbic dysentery were found among soldiers who had only been on the Western front in Flanders and had never been to the tropics.

A summary of the combinations of the parasites constituting the various infections in the 446 positive cases is now given.

The single infections were 325 in number, and were distributed thus:—E. histolytica occurred in 7 cases; E. coli in 81; Giardia (Lamblia) intestinalis in 137; spirochætes (S. eurygyrata) in 23; Blastocystis enterocola in 72; Amœba (Vahlkampfia) limax in 2; Trichocephalus dispar in 2; and Tænia saginata in 1.

The double infections were 79 in number, being distributed as follows: E. histolytica and E. coli occurred together in 5 cases; E. histolytica and lamblia in 3; E. coli and lamblia in 21; E. coli and spirochætes in 3; E. coli and blastocystis in 20; E. coli and hymenolepis embryos in 1; Noc's entamœba and blastocystis in 1; lamblia and spirochætes in 1; lamblia and blastocystis in 15; lamblia and trichomonas in 1; lamblia and coccidia (isospora) in 2; spirochætes and blastocystis in 4; blastocystis and chilomastix (tetramitus) in 1; and blastocystis and trichocephalus eggs in 1.

The triple infections were 33 in number and were distributed thus: E. histolytica, E. coli, and lamblia occurred together in 2 cases; E. histolytica, E. coli, and blastocystis in 2; E. histolytica, lamblia, and spirochætes in 1; E. histolytica, lamblia, and blastocystis in 1; E. coli, lamblia, and spirochætes in 2; E. coli, lamblia, and blastocystis in 18; E. coli, spirochætes, and blastocystis in 2; E. coli, lamblia, and cercomonas in 1; E. coli, blastocystis, and trichomonas in 1; E. coli, lamblia, and coccidia (isospora) in 1; and lamblia, spirochætes, and blastocystis in 2.

The quadruple infections were 7 in number and were distributed as follows: E. histolytica, E. coli, lamblia, and blastocystis occurred together in 4 cases; E. coli, lamblia, spirochætes, and blastocystis in 1; E. coli, lamblia, blastocystis, and coccidia (isospora) in 1; and lamblia, spirochætes, blastocystis, and cercomonas in 1.

The quintuple infections were 2 in number, thus: E. histolytica, E. coli, lamblia, spirochætes, and blastocystis were found together in 2 patients.

In addition to the above records, 499 examinations were made personally by me of 14 special cases in the School of Tropical Medicine Auxiliary Military Hospital, Liverpool. The patients, who were all parasitised, were examined daily while in hospital. The differential findings were as follows:—

No. of special cases, all of them parasitised			14
Total number of special examinations...			499
No. of occasions on which Entamœba histolytica was found ...			27
,, ,,	Entamœba coli ,, ...		45
,, ,,	Giardia (Lamblia) intestinalis ,, ...		348
,, ,,	Trichomonas hominis ... ... ,, ...		1
,, ,,	Chilomastix (Tetramitus) mesnili ,, ...		7
,, ,,	Cercomonas parva ... ... ,, ...		3
,, ,,	Spirochætes (S. eurygyrata)... ,, ...		36
,, ,,	Blastocystis enterocola ... ... ,, ...		22

Most of these 14 special cases were examined more particularly for lamblia, and in the next instance for entamœbæ. Double, triple, and other multiple infections were found in some of the stools. Thus, one patient, when first examined by me, showed Giardia (Lamblia) intestinalis and E. coli. Soon spirochætes, S. eurygyrata, and blastocystis were seen in his fæces, and later E. histolytica was found therein. The periodicity in the appearance of these various parasites was not the same. In this case the lamblia decreased and disappeared for 13 days, then reappearing in sparse numbers. The spirochætes behaved in a somewhat similar manner, but with a shorter period. Tetramitus was also seen in the patient. This example of multiple infection, however, was somewhat exceptional, for in some of the cases studied the only protists present were lamblia.

Details as to the various infections in the special cases may now be set forth. Single infections of lamblia occurred in 2 cases. Double infection of lamblia with E. coli occurred in 2 cases. Each of the remaining cases presented a different combination of parasites. Thus, the remaining combinations were: Lamblia and chilomastix (tetramitus); lamblia and blastocystis; lamblia, E. histolytica, and E. coli; lamblia, E. coli, and spirochætes; lamblia, E. coli, and blastocystis; lamblia, E. coli, and cercomonas; lamblia, cercomonas, and blastocystis; lamblia, E. histolytica, E. coli, and spirochætes; E. histolytica, E. coli, trichomonas, tetramitus, spirochætes, and blastocystis; and lamblia, E. histolytica, E. coli, spirochætes, blastocystis, tetramitus, and cercomonas.

In view of the difficulty of eliminating parasitic protozoa from the human alimentary tract by drugs or other means, and of the recognised occurrence of parasite carriers, these figures are not without interest and significance.

I have pleasure in thanking Captain E. E. Glynn, R.A.M.C. (T.F.), pathologist, Western Command, for much material, and Professor J. W. W. Stephens, and Captain L. A. Morgan, R.A.M.C. (T.F.), for facilities in obtaining specimens from the special cases studied at the Tropical School Hospital. I would especially thank Mr. W. Riddell, M.A., Mr. H. F. Carter, and Miss M. Pallis for help in the routine examinations, and Dr. E. C. Lowe, of Southport, and Dr. A. L. Robinson for material.

AN ENUMERATIVE STUDY OF THE CYSTS OF GIARDIA (LAMBLIA) INTESTINALIS IN HUMAN DYSENTERIC FÆCES.

BY ANNIE PORTER, D.SC. LOND., F.L.S.,
BEIT MEMORIAL RESEARCH FELLOW.

SINCE the beginning of February, up to April 21st, 1916, I have been able to make a numerical study of the cysts of Giardia (Lamblia) intestinalis, found in the stools of certain soldiers who were patients in the School of Tropical Medicine Auxiliary Military Hospital, Liverpool. The numbers of cysts present, each derived from a flagellate organism provided with a sucking disc whereby it abstracts nourishment from the intestinal epithelial cells, are not without significance when the pathogenicity of lamblia is under consideration.

The general morphology of lamblia has been described by different workers on various occasions. The essential features thereof were described by Fantham and Porter[1] in 1915, and the subject will not be further discussed here. The evidence relating to the pathogenicity of lamblia was also given in the same paper.

[1] Notes on Certain Protozoa which may be Found in Cases of Dysentery from the Mediterranean War Zone, Proc. Camb. Philosoph. Soc., vol. xviii., pp. 184-188.

Material and Methods.

This investigation was conducted during the months of February, March, and April, 1916. A daily personal visit was made to the hospital and a moderately large sample of the stool of each patient under investigation was taken. Each sample was treated in the following manner. Half a cubic centimetre of sterile normal salt solution was poured into a finely graduated measuring cylinder, and to this fæces was added in tiny portions from different parts of the sample, until the level of the salt solution was at the one cubic centimetre mark. Thus an exact volume—namely, half a cubic centimetre—of fæces was measured on each occasion. This was further diluted with sterile normal saline solution and was thoroughly emulsified, the dilution being continued until an emulsion sufficiently thin for microscopical examination was obtained. The dilution varied with the consistency of the stool, dilutions of 10, 20, 40, and occasionally 80 being employed. A drop of the emulsion was placed in the chamber of a Thoma-Zeiss hæmocytometer, precautions similar to those used in making blood counts being observed. Usually the counting chamber was filled four times over for each estimation, great care being taken to ensure that the emulsion was as perfect as possible before the sample drop was taken. The number of cysts in a cubic millimetre of the stool examined could thus be estimated. One-half cubic centimetre of stool was employed for dilution, whether the stool were formed, semi-formed, or diarrhœic in character.

The volume of certain of the stools of different patients was determined in cubic centimetres on some occasions. The significance of this, in relation to the probable number of cysts in the whole of an infected stool, is considered later.

It was not possible to retain some of the patients in hospital for as long a time as was desirable from the point of view of extended enumerations. However, certain deductions can be made already from my work, and these will now be indicated.

Cases Studied.

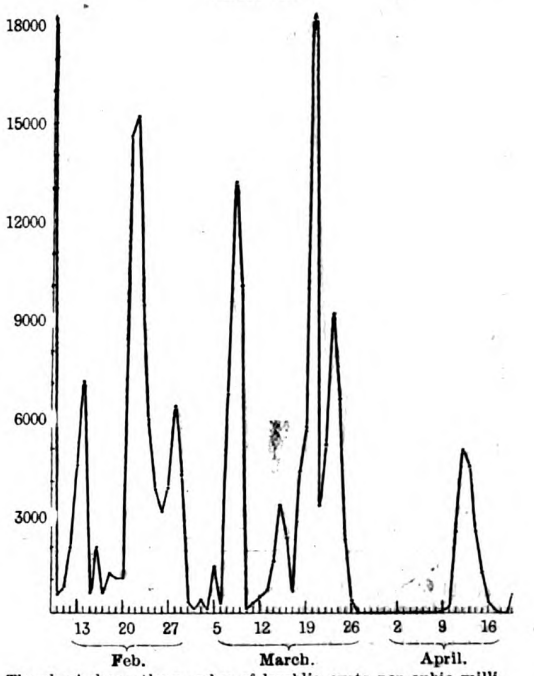
A few general statements may be made in connexion with the cases studied. Some of the patients were relatively convalescent when they came under observation. All of them showed weakness, especially after exertion. With regard to the temperature charts, in the cases of lambliasis there has been little noticeable during the time that I have been able to conduct observations. Occasionally the temperature was slightly subnormal. One patient (Case 1) was in a weak condition when admitted and has remained so from the time he was first under observation up to the present. No parasite other than lamblia has been found in him, and the case is regarded as one of pure lambliasis. This patient, who contracted lambliasis in Flanders, had a stool that was almost always bulky and diarrhœic in character. Its colour and consistency also were peculiar, having been compared with khaki, mud, whipped cream, and putty. Many of the lamblia-infected stools were sulphur-yellow in colour, but in some cases the colour was hardly different from that of normal stools. At times most of the men were somewhat constipated.

Most of the lambliasis patients had received a number of injections of emetine before they reached England. From the time that they came under observation no Entamœba histolytica was found in their stools, and E. coli and blastocystis occurred only very occasionally in some of them. Spirochætes were not observed. The emetine injections seemed to have had little action on the lamblia.

The statements relating to each of the cases studied may now be set forth, but it is not always possible to give details of the earlier history of some of the men.

CASE 1.—This case was of special interest, since the patient had never been out of England before he proceeded to Flanders, where he only stayed two months, and where he contracted lamblial diarrhœa of a severe type on Dec. 18th, 1915. He was invalided and sent to England. During the acute stage of the illness he passed 17 motions daily. No emetine was given. On reaching England he was in hospital in the Thames Valley, and then had a short furlough, after which he was sent to the School of Tropical Medicine Auxiliary Military Hospital from his depôt on Jan. 21st, 1916. He was then passing 14 motions per day, but there was a rapid decrease after treatment with pulv. cret. arom. on Jan. 24th to five and four motions per day, and since April 6th there have been three or four motions daily. On Feb. 15th some blood was passed with the stool. On the 19th β naphthol was given, but it produced vomiting. On the 25th much blood was present in the motion. The bacteriological examination of this blood and of the stool was negative for dysentery-producing bacilli on this and on subsequent occasions, but many lamblia cysts were present. Much blood was also passed on the 27th, 28th, and 29th, and on March 1st. On Feb. 28th mist. terebinthinæ was given and was stopped on March 1st, while on March 2nd and 3rd β naphthol was administered, but produced vomiting. On the 8th mist. terebinthinæ was given again, and on the 15th

CHART 1.



The chart shows the number of lamblia cysts per cubic millimetre from day to day in Case 1.

salol was given. On the 24th treatment with bismuth salicylate three times daily was tried, a level teaspoonful being the dose. The lamblia cysts gradually disappeared under this treatment, which was discontinued on April 5th. The cysts then began to reappear. On the 14th treatment with bismuth subnitrate in 10-grain doses three times daily was begun. The cysts decreased in numbers, but had not entirely disappeared from the stool on the 17th; then followed two days negative, and on the next day the cysts returned, showing that the dose of bismuth subnitrate was hardly large enough.

The daily enumerations in this case were as follows:—

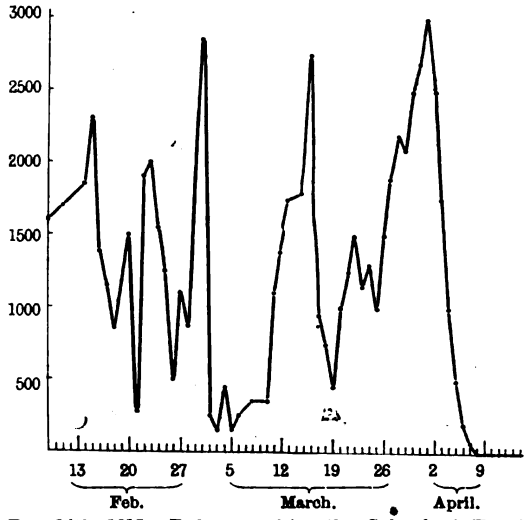
Date.	Lamblia cysts per c.mm. of fæces.	Date.	Lamblia cysts per c.mm. of fæces.
Feb. 9	18,200	March 10	150
,, 10	550	,, 11	300
,, 11	800	,, 12	500
,, 12	2,000	,, 13	700
,, 13	4,500	,, 14	1,600
,, 14	7,050	,, 15	3,300
,, 15	600	,, 16	2,300
,, 16	2,000	,, 17	650
,, 17	600	,, 18	4,350
,, 18	1,200	,, 19	5,700
,, 19	1,050	,, 20	25,400
,, 20	1,050	,, 21	3,300
,, 21	14,600	,, 22	5,150
,, 22	15,200	,, 23	9,150
,, 23	9,400	,, 24	6,550
,, 24	5,900	,, 25	2,250
,, 25	3,750	,, 26	400
,, 26	3,100	Mar. 27 to Apr. 8	...Negative.
,, 27	3,800	April 9	50
,, 28	6,300	,, 10	200
,, 29	4,200	,, 11	2,500
March 1	300	,, 12	5,000
,, 2	150	,, 13	4,500
,, 3	400	,, 14	2,500
,, 4	150	,, 15	1,250
,, 5	1,400	,, 16	375
,, 6	300	,, 17	100
,, 7	6,650	,, 18	...Negative.
,, 8	13,200	,, 19	,,
,, 9	10,000	,, 20	600

The graphical representation of the foregoing results is shown in Chart 1. Owing to limitations of space, in Cases 2 to 7 the graph alone is given.

Case 1 shows that Giardia (Lamblia) intestinalis is, to say the least, not without pathogenic significance, as it is the only organism that has been found in the patient that can in any way bear a causal relation to the diarrhœa from which he suffered.

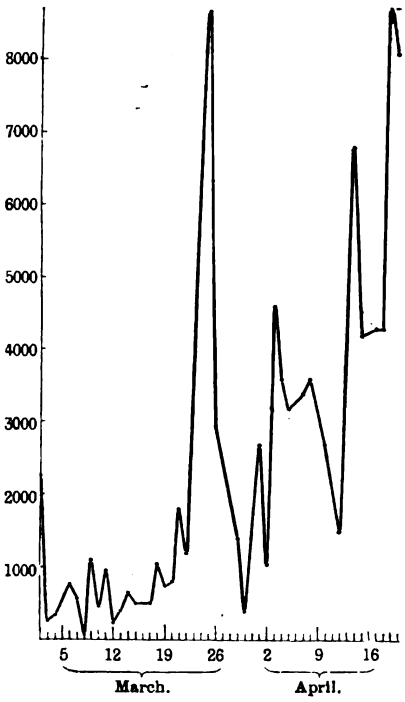
CASE 2.—This patient contracted dysentery when at the Dardanelles, and has been ill since Oct. 15th, 1915. At first he was in hospital at Alexandria, whence he was invalided

CHART 2.



on Dec. 14th, 1915. Before reaching the School of Tropical Medicine Hospital on Dec. 24th, he had received 22 injections of emetine. Ten stools per day were passed during the acute stage of the illness. When admitted to hospital the number of stools was up to four per day, and since then usually two or three motions have been passed daily. As with several of the other cases of lambliasis, constipated periods have occurred, and it has been necessary to have recourse to aperients. On April 5th, 1916, treatment by the administration of a teaspoonful of bismuth salicylate three times daily was commenced. The cysts had disappeared from the stools by April 8, and have not since reappeared during treatment. (See Chart 2.)

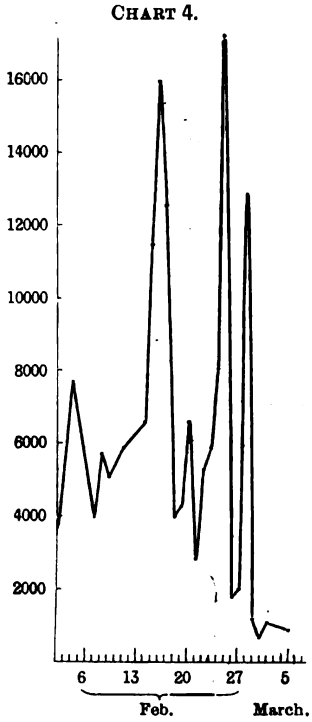
CHART 3.



CASE 3.—This patient from the Dardanelles had contracted dysentery on Oct. 26th, 1915. He was first sent to hospital in Malta, and was invalided to England on Jan. 25th, 1916. Twelve to 15 motions per day were passed during the acute stage of the malady. Prior to reaching the School of Tropical Medicine Hospital he had received 12 injections of emetine. When admitted on Feb. 10th one motion was passed daily, but since then two or three, or occasionally one, have been voided. Constipated periods have occurred when aperients had to be given. (See Chart 3.)

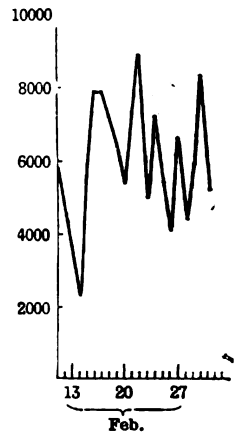
CASE 4.—This patient contracted dysentery when at Alexandria. No protozoal infections were then found in the stools. On admission to the School of Tropical Medicine Hospital on Dec. 7th, 1915, he passed one to two motions daily. No mucus was present in the stools. The early treatment of the patient from Dec. 22nd was by pulv. cret. arom. On Feb. 15th, 1916, β naphthol was administered three times daily. This was continued until the 23rd. On the 26th mist. terebinthinæ was ordered and a decrease in the number of lamblia cysts ultimately occurred, though the patient was not free from lamblia when discharged. (See Chart 4.)

CHART 4.



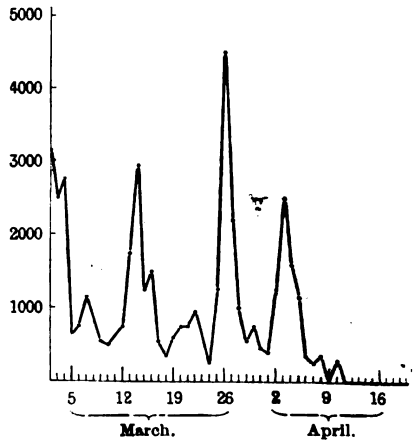
CASE 5.—This patient came from the Dardanelles, where he had contracted dysentery about Oct. 15th, 1915. During the acute stage of the malady 16 stools were passed daily. He received 15 injections of emetine before reaching England, whither he was invalided on Oct. 24th. When his stools were examined at the School of Tropical Medicine Hospital in February, 1916, no entamœbæ were found, but an abundance of lamblia cysts was present. No special treatment was administered in this case, and the patient was still infected when discharged, but the parasites were decreasing in numbers. (See Chart 5.)

CHART 5.



CASE 6.—This patient, when at the Dardanelles, became infected with dysentery on Nov. 14th, 1915. He was sent to Mudros and thence to England. He received four injections of emetine prior to entering hospital at Liverpool, but no entamœbæ were found when a stool was examined, though many lamblia cysts were present. One or two motions were passed daily at first, but the number increased to two or three. Treatment with bismuth salicylate, one teaspoonful three times daily, was ordered on April 4th, 1916. On the 6th, after the bismuth treatment had begun, the cysts decreased in number, and from the 11th to the time of writing have not reappeared. (See Chart 6.)

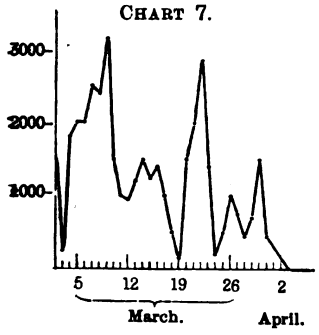
CHART 6.



CASE 7.—This patient had contracted dysentery on Dec. 7th, 1915, when in Gallipoli, and was sent to Malta. He was invalided thence on Jan 25th, 1916, and was admitted

to the School of Tropical Medicine Hospital on Feb. 2nd, 1916. During the acute period of the disease nine motions were passed daily. Before reaching England he had received two injections of emetine. On admission one or two stools were passed daily, and they were almost always bulky and hard in character. On March 29th treatment with bismuth subnitrate, one teaspoonful three times daily, was ordered. The lamblia cysts decreased in numbers, and had disappeared on April 3rd, after which the man was discharged. (See Chart 7.)

CHART 7.



The Volume of Lamblia-infected Stools and the Possible Number of Parasites Therein.

The daily examination of this series of stools has led to the conclusion that probably there is a greater uniformity of distribution of lamblia cysts in a diarrhœic stool than in a formed or hard one. The distribution of cysts in different parts of a stool, however, varies to some extent, but attempts were made to allow for this in the taking of the sample and in the making of the emulsion. As a rule, there appeared to be more parasites in a diarrhœic stool than in one of firmer consistency.

Determinations were made of the volume in cubic centimetres of some of the stools of patients infected with lambliasis. The diet in Cases 1 and 2 at first was milk and fish. Later a chicken diet was prescribed. The remaining five patients were given an ordinary mixed diet. It was found that the volume or bulk of a normal stool from a man fed on a mixed diet varied from 130 to 180 c.c. per day. Pathological stools may vary in volume from about 500 to 1200 c.c. One of the patients observed (Case 1), who is an example of pure lambliasis, had bulky stools varying from 175 to 500 c.c., volumes near the latter figure being the more common. On a few occasions the volume of this patient's stool has reached 950 c.c. Another patient (Case 2) at first had stools that were about normal in volume, averaging 150 c.c., but latterly they have been smaller, averaging 50 c.c. In yet a third patient (Case 3) the bulk of the stool was often 180 to 200 c.c., but latterly the volume has fallen to an average of 125 c.c. The possible number of cysts in a bulky infected stool, such as that of Case 1 on Feb. 22nd, when the volume was 950 c.c. and the number of lamblia cysts per c.mm. was 15,200, is:

$$15{,}200 \times 1000 \times 950 = 14{,}440{,}000{,}000.$$

The possible number of cysts in an infected stool of average volume, such as that of Case 3 on a day of moderate infection—for example, on March 21st, when the volume was 180 c.c. and 1800 lamblia cysts were found in 1 c.mm., is:

$$1800 \times 1000 \times 180 = 324{,}000{,}000.$$

The possible number of lamblia cysts in an infected stool of small bulk on a day when the infection is relatively low, such as that of Case 2 on April 6th, when the volume was 50 c.c. and the number of lamblia cysts per c.mm. was 200, is:

$$200 \times 1000 \times 50 = 10{,}000{,}000.$$

The above examples are sufficient to indicate that the number of lamblia cysts contained in an infected stool is counted in millions, and that every endeavour should be made to reduce and, as far as possible, to eliminate the organisms.

General Observations.

Certain points of general interest may now be mentioned. Examination of a large number of stools has shown that uniformity of distribution of lamblia cysts in a diarrhœic stool is more probable than in a formed or hard one. In general there are not so many parasites in a formed stool as in a diarrhœic one. The motions of some of the cases of lambliasis were constipated at times.

Relapses of cases of lambliasis may occur. Also, certain workers have considered that lamblia is harmless and have given no treatment for it. In other cases men known to be heavily infected with lamblia cysts, but free from dysentery-producing bacilli, have been discharged from hospital. Both these classes of men may act as reservoirs of lamblia, and the infective cysts of the parasite may be shed promiscuously through the land, especially in country districts where sanitary arrangements may be somewhat primitive. There is, then, danger of outbreaks of lamblial diarrhœa, especially among infants and younger children. Outbreaks of flagellate diarrhœa have in the past been reported in certain parts of South America and in Italy. Also cases of lambliasis have been recorded by several French workers from investigations conducted by them in Tonkin and other parts of Indo-China, and the infestation of the patients' houses by rats and mice has been noted. This observation is not without interest, as such rodents harbour species of lamblia in their intestines.

The danger arising from the presence of apparently healthy carriers of amœbic dysentery in a community is now well recognised. It is a matter of regret that seemingly so little consideration has been given to the problem of the carriers of lamblia cysts, who may be a source of considerable trouble in the future.

From Charts 1 to 7 it will be seen that the numerical distribution of lamblia cysts in a patient's stools varies from day to day. Cysts result from the rounding of the pear-shaped, suctorial flagellate forms. The cysts themselves are very difficult to eliminate and destroy by means of drugs. Every effort, therefore, should be made to attack the flagellate forms of lamblia—that is, the precursors of the cysts. Probably when cysts are few in the stool of a person suffering from lambliasis, there are numerous flagellates in the duodenum and other parts of the intestine of the patient, and it would be well to try medicaments at such periods. Thus, it might be hoped that the flagellate organisms would be killed before they encysted, and the formation of a new "crop" of cysts be thereby prevented.

Again, from a study of the charts it will be seen that casual examinations of stools made at irregular intervals will result in a fallacious impression being obtained. It is necessary that regular examinations should be conducted, and should be continued over several months if possible.

The periodicity in the appearance of the maximum number of lamblia cysts appears to vary in the different cases. In some of the cases there seems to be a period of about a fortnight between the maximal crops of cysts (see Charts 1, 2, 6, 7), while in other cases it is somewhat less. By daily examinations of the stools of two other (uncharted) cases of lambliasis, periods of 14 and of 10 days were found.

In conclusion, I have pleasure in thanking Professor J. W. W. Stephens, Captain L. A. Morgan, R.A.M.C. (T.F.), and Captain E. E. Glynn, R.A.M.C. (T.F.), for affording me facilities for obtaining material at the School of Tropical Medicine Auxiliary Hospital, Liverpool, and the sisters at the hospital for their cordial coöperation in securing the retention of the patients' stools needed for examination.

SPINAL ANÆSTHESIA:

WITH REFERENCE TO ITS USE IN THE TRENDELENBURG POSITION AND FOR THE PREVENTION OF SHOCK.

BY H. M. PAGE, F.R.C.S. ENG.,

ANÆSTHETIST TO GUY'S AND THE WEST LONDON HOSPITALS, ETC.

With a Note by HAROLD CHAPPLE, M.C. Cantab., F.R.C.S. Eng., *Obstetric Surgeon to Guy's Hospital, &c.*

FOR all ordinary uncomplicated cases inhalation anæsthesia as improved at the present day is still the method of choice. Ether, if not contra-indicated, after a preliminary injection of atropine with or without opium, is rightly preferred, given by means of Clover's apparatus, with the addition, if possible, of oxygen, or by the open method, when a warmed vapour should be blown to the patient if the administration is anything more than a short one, which warming can be very simply effected by coiling an extra long delivery tube in a small receptacle for hot water or by the use of a thermos flask, as in the apparatus designed by my colleague, Dr. F. E. Shipway. There are also special cases where ether is best given by the intratracheal method, by Crile's tubes, or the rectum. Warmed nitrous oxide and oxygen with or without the addition of some ether vapour may be the method to choose, if available. There is also the intravenous route, which may have advantages under certain circumstances, though there are few cases that,

in my opinion, cannot be better managed with one or other of the above-mentioned methods of using ether in conjunction with subcutaneous or, if necessary, intravenous administration of saline or glucose solution. Chloroform is required for some cases, and in the form of A.C.E. or C.E. mixture is of great use for induction. When it is advisable to use chloroform all through the administration, I consider that the percentage method, with the addition of a small quantity of oxygen, is the best method to employ.

There remain, however, many cases in which those who are familiar with its use will agree that great advantages can be obtained by the use of spinal anæsthesia. By this means either the whole or the greater part of the operative shock is done away with. (No form of general anæsthesia can prevent shock.) A more complete muscular relaxation is produced than by any other method of anæsthesia, thereby assisting the surgeon in his work, shortening the time of operative interference, and diminishing traumatism. The operations in which these advantages may be of special importance are those for acute abdominal conditions, especially if septic in nature; any prolonged abdominal procedure likely to be followed by shock; amputations; operations on the bones of the lower limbs, especially when the patient's vitality is lowered by exhaustion, sepsis, or hæmorrhage; and certain genito-urinary operations. At the present time there are many cases of injury to the bones of the lower limbs requiring plates, &c. Spinal anæsthesia is an immense help to the surgeon in all these cases owing to the complete muscular relaxation obtained, and in some will save life by preventing the very great shock often met with in difficult cases of fractured femur.

With regard to the risk of sepsis in spinal injection, a small amount of sterilised fluid sealed in a glass capsule is used, and the operation of injecting it within the theca after taking all ordinary aseptic precautions should be done without touching any part of the needle that comes in contact with the thecal membrane or the solution to be injected.

Though the position of spinal anæsthesia in surgery is now more or less generally accepted, and though there are many surgeons and gynæcologists who are familiar with the use of spinal injections with the Trendelenburg position, the fact that it can be used safely in this position is not generally recognised. Mr. Harold Chapple asked me to try spinal anæsthesia in connexion with the Trendelenburg position four years ago for certain selected pelvic operations. I have therefore ventured to report 70 cases in which the patient was put into the Trendelenburg position after intrathecal injection. I could have reported many more cases in which the patient was put in a slight incline with the head lower than the body without any trouble occurring, but I have only included here those put into the Trendelenburg position. When this position is used it is better to combine a general anæsthetic with the spinal injection, for the small quantity of ether or chloroform mixture required to keep the patient unconscious when there is no reflex disturbance has no necrotic effect on the tissues and practically has very little effect on the after-condition of the patient. If nitrous oxide and oxygen be used there is no effect at all in this respect. The administration of nitrous oxide and oxygen for prolonged periods is quite easy after either a spinal injection or in conjunction with satisfactory local infiltration with novocaine, as recommended by Crile. In this way mental shock and distress are prevented and the patient escapes the discomfort of lying upside down for a long period. The general anæsthetic is only given to produce a state of unconsciousness, not surgical anæsthesia. However, 12 of these cases were operated on successfully without any general anæsthetic being given. Novocaine, the Saccharine Corporation's 5 per cent. solution with adrenalin was used in the majority of the cases, the dose varying from 2½ c.c. to 3 c.c., seldom under 2¾ c.c. The boy, aged 3 with ruptured liver, was given 1 c.c. of the novocaine solution. Stovaine, Billion's 10 per cent. solution, generally 6/10 c.c., never more, sometimes 5/10 c.c., was used in the others. About 2 c.c. of spinal fluid were drawn into the syringe containing the stovaine and reinjected. I vary the dose according to the size, condition, and age of the patient, with some reference also to the size of the individual. Solutions to which glucose or other weight-giving substances have been added must not be used.

The injection is given with the patient lying on the side. Immediately after the injection the patient is turned on to the back and the thighs well flexed on the abdomen, this position is maintained for five minutes, after which the patient is got ready for the operation. The patient is put into the Trendelenburg position 15 minutes after the injection when novocaine has been used and 15 to 20 minutes after injection with stovaine, according to the rapidity with which the anæsthesia spreads upwards.

In the present series there was no case of surgical shock. In some cases there was a fall of blood pressure without quickening of pulse-rate, remedied immediately, if thought necessary, by raising the legs to a level with the rest of the inverted body; this loss of pressure which disappears when sensation and movement have returned to the legs, is, I believe, due to a mechanical vasomotor effect. Owing to the inverted position symptoms of general toxicity following absorption of the drug into the blood are practially absent.

Twelve cases were operated on without any general anæsthesia. The spinal anæsthesia in those cases, of course, was excellent. In the remaining 58 there was perfect anæsthesia and relaxation in 55. In several of these cases the operation was begun before any general anæsthetic was given; in none of them was the lid reflex abolished or the jaw relaxed by the small quantity of inhalation anæsthesia employed. In the three cases of partial failure a more or less deep inhalation anæsthesia was required. The surgeon experienced in the use of spinal anæsthesia is quite aware whether he is dealing with the complete flaccid relaxation due to intrathecal injection or the relaxation following a well administered general anæsthetic. There was no case of interference with respiration; no artificial respiration had to be done. No patient died on the table or before recovery from the paralysis. There have been no permanent sequelæ.

The Trendelenburg position was used after spinal injection in the following cases. "Recovered" in this list means that the patient recovered from the operation.

Cases in which the Trendelenburg Position was Used after Spinal Injection.

	No. of cases.	Recovered.	Died.
Complete Wertheim's operation for carcinoma uteri	14	11	3
For carcinoma uteri	5	5	—
,, sarcoma uteri	1	1	—
,, fibroids	18	17	1
,, ectopic gestation	1	1	—
,, removal of tubes and appendix	4	4	—
,, ,, ,, tube and right ovary	2	2	—
,, inoperable carcinoma uteri (tying arteries)	4	4	—
,, growths in the bladder	4	3	1
,, ventral hernia	2	2	—
,, ovariotomy	3	3	—
,, ventral fixation	1	1	—
,, appendicectomy, curetting and fixing ovaries	1	1	—
,, large suppurating gland in mesentery	1	1	—
,, gastro-jejunostomy	1		1
,, carcinoma of sigmoid	2	2	—
,, intestinal obstruction	4	2	2
,, adhesions, intestinal	1	1	—
,, ruptured liver	1	—	1
Totals	70	61	9

Particulars of the Nine Fatal Cases.

1. Wertheim's operation. Patient died suddenly from pulmonary embolism three weeks after the operation.

2. Wertheim's operation. Patient died from hæmorrhage on the day following the operation. Much blood lost both on the table and afterwards. This was not one of Mr. Chapple's cases.

3. Wertheim's operation. Very anæmic, cachectic woman, with some œdema. She seemed to recover well from the operation at first, but died five days after.

4. Death after hysterectomy for fibroids. The patient was an enormously stout woman. The surgeon said that but for the relaxation produced by the spinal injection he could not have operated at all on account of her obesity. She recovered very well from the operation, but died from pulmonary embolism on the twenty-fifth day when practically well.

5. A young man who had been allowed to bleed from a non-malignant growth of the bladder until he was quite

exsanguined, cold, and feeble to the last degree. The growth was removed suprapubically. He was not at all worse at the end of the operation. There was no hæmorrhage. He had lost too much blood to be able to recover, and died on the third day.

6. The patient, who died after gastro-jejunostomy, recovered perfectly from the spinal injection and immediate operative interference, but died on the sixth day from acute intestinal obstruction, demonstrated by post-mortem examination.

7. The patient, who died after anastomosis for obstruction, was 18 years of age. She had been operated on eight days before for acute obstruction, a tube being put into the ileum. She died three weeks after the operation for anastomosis, the determining cause being toxicity due to the extremely septic condition of the abdominal wound, which was present before the operation done under spinal anæsthesia.

8. The other patient suffering from obstruction, who died, was a woman aged 68. She had a transposed heart. According to the report of the physician her heart was in a diseased and failing condition, apart from the acute disease, and she could not take a general anæsthetic. She had an attack of hemiplegia seven days after the operation and died a few weeks later.

9. The patient, operated on for ruptured liver, was a boy aged 3. He was suffering from intense shock with extreme dyspnœa. Several ribs were broken and the lungs were injured; there was double pneumothorax. He was not appreciably affected by the abdominal exploration, and recovered completely from the spinal paralysis, but died some hours after from the condition of his chest.

I consider that the spinal injections had nothing to do with the result in any of the nine fatal cases, that Cases 2, 3, 5, and 7 had a better chance of life than if the operations had been done under general anæsthesia, and that Cases 4, 8, and 9 could only have been operated upon under spinal anæsthesia.

I should also like to report eight cases operated on under spinal anæsthesia in the Trendelenburg position at the West London Hospital by Dr. H. J. F. Simson. The anæsthetist was Dr. A. C. Sandston, of Christchurch, N.Z. The method used was the same as I have described. All the patients have recovered from their operation and there were no sequelæ and no trouble during the operations.

Note by Mr. HAROLD CHAPPLE.

During the last four years I have made use of spinal anæsthesia on many occasions in operations on the female pelvic organs, and am thoroughly in agreement with Mr. Page as to its great value. As he has said, ordinarily the usual inhalation methods skilfully given are perfectly satisfactory, but when surgical shock is anticipated a spinal anæsthetic followed by sufficient ether to render the patient unconscious has proved of very great benefit. For instance, the so-called Wertheim's operation for carcinoma of the cervix, which was formerly rather dreaded because of the frequent association of great shock, can now safely be performed if this method of anæsthesia be employed, and especially if normal saline be at the same time introduced into the axillæ after the method of Arbuthnot Lane. The attitude with which one approaches this operation is now entirely different and it is not at all unusual to send the patient back to bed after a complete removal of the affected parts and a dissection of the pelvic glands with a full pulse running at about 92 or thereabouts. From the surgeon's point of view the other great advantage it affords is the complete relaxation of the abdominal muscles. This is particularly noticeable in stout women, who frequently take ether badly, and the greater ease with which the pelvic organs can be attacked is very satisfactory.

The method of introduction is simple, and if the patient be kept in a suitable position for a few minutes the extreme Trendelenburg position can be adopted with perfect safety. We have had no trouble with it, except that on a few occasions the patient has complained of severe headache for a few hours. There have been no permanent ill-effects of any kind. The momentary discomfort associated with the introduction is a small price to pay for the great advantages to be gained in the almost complete absence of shock and the facility afforded by the complete abdominal relaxation.

BRIGHTON, ROYAL PAVILION HOSPITAL. — The Queen has presented the Royal Pavilion Hospital at Brighton with a building to be used as a school for the teaching of some occupation to limbless soldiers.

OBSERVATIONS ON THE TREATMENT OF ANAPHYLAXIS.[1]

BY ALBERT S. LEYTON, Sc.D., M.D. CANTAB., F.R.C.P. LOND.,
PROFESSOR OF PATHOLOGY, UNIVERSITY OF LEEDS;
AND
HELEN G. LEYTON, M.D. BIRM.
(*From the Department of Pathology, University of Leeds.*)

THE causation of anaphylaxis is still a matter of doubt. Of the two chief theories, one regards the anaphylactic phenomenon as due to the union of two substances producing a poisonous combination which then acts on the sensitised cells, while the other theory assumes that it results from the liberation and direct action of the toxin within the sensitised cells. We do not think the cell sensitisation essential. All the theories may be true, for the symptoms are not always alike in different species of animals, and they are not even always the same in the same species.

In the human subject some kind of indefinable sensation that the patient cannot describe precedes the more objective symptoms—namely, flushing of face, general erythema, cyanosis, and unconsciousness—which are evidently of cardio-vascular origin. This premonition in itself rather points to a central nervous cause for the whole phenomenon, and this supposition underlies some of the experiments on treatment about to be described. Death is, we think, always the result of cardiac failure, although some believe that in the guinea-pig, in which animal the respiratory symptoms are often very prominent, spasm of the pulmonary muscle is more important. Our method of experiment, in the guinea-pig, is to inject the sensitising dose (generally 0·02 c.c.) subcutaneously and the toxic dose (1 c.c. or more) into a vein of the ear. By this means we appear to obtain a larger percentage of positive results than many observers. We are able to confirm the observation that different strains of guinea-pig vary in sensitiveness and have noted that all-tan coloured guinea-pigs are especially susceptible. In other animals a disturbance of the respiratory rhythm may also be seen, even in minor anaphylactic attacks, and it may, in man, make artificial respiration necessary. Nevertheless, as the result of experiments on the excised rabbit's heart,[2] we believe that the anaphylactic phenomenon (*a*) is due mainly to a toxic combination of horse serum and patient's or animal's serum and (*b*) is dangerous chiefly on account of the effect on the central nervous system and the cardiac muscle.

We have accordingly been led to investigate some possible remedies or prophylactics.

The problem may be attacked in two ways: (1) By modification of the serum, so as to eliminate the toxic element; or (2) by treatment of the patient, either before or after the onset of symptoms.

1. *Modification of the Serum.*

This method has been attempted by several manufacturers of antitoxic sera, so far with but little success. There is no doubt that different samples of horse serum, as tested on the excised rabbit's heart, vary much in toxicity, and, further, that the amount of toxic substance diminishes after the first week of keeping. It is partly on this account that the sera from several horses are mixed and kept a little while before being issued for sale, although the accidents which happen with commercial sera show that these precautions are insufficient. Filtration through a porcelain candle will remove a very large fraction of the toxin, but unfortunately also of the other essential elements. The candles used commercially for filtering antitoxic sera also allow the anaphylatoxin to pass through.

Pasteurisation of the serum and the attempt to eliminate the toxic element by precipitation methods are both unable to make the serum innocuous. This is not surprising when we remember how very resistant the sensitising molecule is to heat and many powerful chemical substances, and the toxic molecule, although weakened, is not destroyed by the moderate heat which it is possible to apply to antitoxic sera.

[1] The expenses of this investigation were defrayed in part by a grant from the Medical Research Committee.
[2] Journal of Physiology, vol. l., 1916, p. xiii.

We have tried the effect of various chemical substances, such as iodine, chlorine, eusol, and potassium permanganate, and have found, as indeed others have already done in the case of some of them, that the toxic element cannot, by these means, be entirely eliminated. In a small number of instances the serum, after contact with iodine or eusol, did not induce anaphylaxis, but this result was not constant. For the time being, therefore, we are reduced to an attempt to prevent or to treat symptoms. The rapid onset and course of the anaphylactic shock makes the application of treatment, even if one is prepared for it, a matter of great difficulty, and the ordinary analeptics appear to be of little use.

2. *The Treatment of the Patient.*

Nevertheless, the treatment of anaphylaxis, at least in the guinea-pig, is not entirely hopeless, if due preparation is made. Rosenau and Anderson state (and our experience coincides with theirs) that untreated guinea-pigs never recover if the anaphylactic condition has proceeded to the convulsive stage. It is therefore noteworthy that the injection of alcohol or of spirit of camphor has in some cases averted death even after convulsions have begun. In four out of eight animals recovery took place after marked symptoms of anaphylaxis had set in, while among untreated animals showing only slight symptoms only 11 out of 43 recovered. The subcutaneous administration of alcohol in human cases of sudden collapse after the injection of serum is therefore worthy of trial. We have attempted also to deal prophylactically with the individual symptoms exhibited by the anaphylactic guinea-pig. In this animal both heart and lungs appear to be involved. The injection of camphorated oil just before the toxic dose of serum generally inhibits the respiratory signs; there is no cough, and after death the lungs are not unduly distended and do not show any petechiæ. But camphor will not avert the fatal issue, although it thus counteracts the respiratory signs, so that presumably respiratory failure is not the determining cause of death.

The effect of anæsthesia on anaphylaxis is a matter of dispute. Besredka has said that it inhibits the phenomenon, while Rosenau and Anderson assert that it does not. In this case it would almost seem as if the negative must outweigh the positive observation. We have not investigated the point ourselves, but as a nervous element is almost certainly involved in anaphylaxis, we have tried certain drugs, alone and in combination, acting both centrally and peripherally on the nervous system. By administering one or more of them before the serum, we have successfully averted anaphylaxis in a large percentage of instances. The drugs which we have used successfully are hyoscine, scopolamine, morphine, and atropine. Before recording the results we wish to point out a possible source of confusion and disappointment. Although the alkaloid is said to exist in four isomeric forms, the British Pharmacopœia does not distinguish between them and uses the names hyoscine and scopolamine (lævo-rotatory) as synonyms. Accordingly at least one well-known firm (A) calls its lævo-rotatory alkaloid "hyoscine" and does not use the term "scopolamine" at all, while another firm (B) supplies two different substances under the two names. We obtained preparations labelled "scopolamine" (lævo-rotatory) and "hyoscine" (racemic) respectively, and discovered a marked difference of action between them. Put shortly, it may be said that only hyoscine B was of use by itself in invariably averting anaphylaxis: scopolamine B mostly did so, but hyoscine A, which is presumably identical with it, was of no use alone.[3]

The doses given were, per 500 gm. of guinea-pig, of hyoscine or scopolamine hydrobromide, 1/400 grain; of morphine sulphate, 1/24 grain; and of atropine sulphate, 1/600 grain. The results are given in tabular form.

These results show that, in combination, both hyoscine (B) and scopolamine (A) have a distinct influence in preventing anaphylactic shock, but only hyoscine will do so by itself. This we attribute to the more central action of hyoscine as compared with the more peripheral action of scopolamine. It is therefore the preferable drug to use, but apart from other reasons, owing to the uncertainty of obtaining it and not an isomer, it is well always to order the combination with morphine and atropine. Morphine and atropine by themselves do not possess any noteworthy protective power, but appear to counteract the dangerous properties of hyoscine.

Drugs.	No. of tests.	No. of survivals.	No. of deaths.
Hyoscine (B)	10	10	0
Hyoscine (B) ... ... Morphine... ... ... Atropine	4	4	0
Scopolamine (B)	6	5	1
Scopolamine (B) ... ... Morphine... ... ... Atropine	7	4	3
"Hyoscine" (A)	3	2	1
"Hyoscine" (A)... ... Atropine ... ... Morphine...	36	32	4
Hyoscine (D)	10	8	2
Hyoscine (E)	15	15	0
Total	91	80	11
Controls	63	24	39

Judging from the medical war literature so far published, anaphylaxis does not seem to have occurred so often as to have called for comment. Nevertheless, we would recommend strongly the employment of hyoscine previous to the injection of serum for a second time in any case where the interval since the previous injection has exceeded one week. Inasmuch as the soporific effect of hyoscine in the case of guinea-pigs is but little marked as compared with man, we may hope that it will be even more efficacious in human beings than in animals.

Leeds.

[3] Since the above was written, we have found further variations with different specimens of hyoscine and scopolamine, with which we propose to deal in another note.

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Reviews and Notices of Books.

Medical Ethnology.

By CHAS. E. WOODRUFF, A.M., M.D., Associate Editor of "American Medicine." London: William Heinemann. Pp. 321. Price 10*s.* 6*d.* net.

THE impression produced by the title of this book is that it deals with the diseases affecting different races, but actually the subject is considerably larger, embracing the effects of physical conditions in modifying *la bête humaine*, and thus producing and localising racial varieties. The author holds that the first human beings were black-haired animals, but not black-skinned, as their seat of development must have been in a cold country where conditions of life were hard, necessitating a great development of brain, since only the most intelligent could survive. They were originally cave-dwellers. After a time, when the earth was largely peopled with this race, there arose a large blonde type in Northern Europe—Nietzsche's "blond beast," the Teutonic superman—who established himself in a dominating position in many countries by right of conquest. To this race belonged the ancient Greeks, the original Romans, the ruling race in Egypt, and so forth. Unfortunately, this type tends to die out when it migrates from its native climate, and so in time the Romans died out and their empire fell to pieces, and the glorious period of the Greek intellect was short-lived. In the same way white races fail at the present day to establish themselves permanently in tropical climates. Such is the general view of the author on the factors of human evolution.

The various chapters of the book deal with the effects of a number of external conditions on mankind. Light is especially considered, and the author seems to look upon it as almost entirely harmful. The dark skin of tropical races serves as a protection, by cutting off the rays of light; it also assists the body in radiating its heat, but at the same time favours absorption from a hot environment, so that dark races stand such heat as that of a stoke-hole worse than light-skinned people. Contrary to common opinion, the author holds that bright light is bad for children at school, rendering them restless and irritable. The neurasthenia which affects white residents in the tropics and their children is largely due, he considers, to excessive light, aided doubtless by high temperature. Other forms of radiation are separately considered. We give this example of the author's material and manner, adding that the whole book is a storehouse of facts, collected from numberless sources,

bearing on the problems with which it deals. The material is in places somewhat undigested, leaving the general impression blurred, but, none the less, the book is exceedingly interesting. Here and there are slips. Such a statement as that the rash of scarlet fever appears on the face would make us wonder how far other and less easily verifiable statements are to be trusted, were it not that the writer's position is one that especially calls for the accurate information which he is sure to possess. Some of the conclusions, too, are surprising, as, for example, the view that those who drink alcohol in the tropics enjoy better health than abstainers. Here the author gives grounds for his statement. Again, the view that prehistoric man, with his larger skull-capacity, was more intelligent than his modern successors will not appeal to the optimistic evolutionist of the present day. Such suggestions, however, serve to challenge the thoughtful, and we commend the book to the attention of all those who wish to study in a scientific spirit man's relation to the outer world.

JOURNALS.

Malaria e Malattie dei Paesi Caldi. Anno VII., February and April, 1916. Nos. 1 and 2. Rome: Via Farini 62.—In these issues there are several articles of interest, and we note especially one by E. Sergent and H. Foley, working at the Pasteur Institute in North Africa, on the recurrent fever prevalent in those localities. They find the cause to be a special spirochæte, S. berbera, belonging to the group S. obermeieri. The disease is transmitted by body lice, not by biting, but by the crushing of the insect upon the skin, whereby the virus comes in contact with excoriations or mucous surfaces. The virus undergoes a latent evolution of about a week's duration in the louse after feeding on infective material, and a similar one in the patient in the interval between the attacks. The infection is hereditary in the louse. The immunity acquired is of short duration and is in relation with the severity of the infection. It is often characterised in man by the suppression of the recurrences in a relapse whose real nature is then almost unrecognisable for the clinician without recourse being made to blood examination. Serum agglutination in a convalescent from a fever of unknown nature enables a diagnosis to be made.—Another interesting communication by Dr. P. Vadalà relates to a peculiar form of dermatitis occurring in workers with the common rush, Arundo domex. It is produced by a peculiar black dust found in the stems of this plant and has an incubation period of from 3 to 20 hours. It is erysipelatous in character and is caused either directly by contact with the black dust or perhaps by the habitual micro-organisms of the skin being roused into activity by it. Fair people are most often the victims, and relapses are frequent.—Dr. P. P. Fusco has a paper on a form of chronic cirrhosis of the liver prevalent in Tripoli, first described by Budd and Hanot as due to auto-intoxication of gastro-intestinal origin, common in all hot climates, in which, notwithstanding the severity of the symptoms, the etiology gives hopes of cure by milk diet, mild alkaline purgatives, diuretics with iodide of potassium and injections of iodine.—There are communications on Leishmaniosis interna by P. Zinconi, S. Maggiore, and A. Aravindinos, on Mediterranean fever with hæmorrhages of the skin and mucous membranes by A. Castronovo, on infantile splenic anæmia with fever by B. Santangelo, and on sandfly fever in Bengari by C. Ragazzi.

Annali dell' Istituto Maragliano. Vol. VIII., No. 3, March 24th, 1916. Piazza del Popolo 11, Genoa.—This issue is devoted almost entirely to researches on tubercle. The most important, by Dr. G. Costantini, treats of the tubercle bacillus and organic reaction to antituberculous vaccination, and describes the experiments made by the writer on bacteriolytic phenomena in the tissues. These seem to show that the tissues have a natural lytic action on Koch's bacilli, and that the organism defends itself vigorously at the expense of the connective tissue. A further induction is permissible; the fact that the homogeneous bacilli do not pass directly into the granular forms described by Much suggests that two types of envelope surround the bacilli, one investing each granule and the other, an external one, investing all the granules together which form the bacillus.—Dr. L. Sivori writes concerning the organic reaction to antituberculous vaccination in healthy subjects, and on tuberculous antigens in the urine.

THE GENERAL COUNCIL OF MEDICAL EDUCATION AND REGISTRATION.

SATURDAY, MAY 27TH.

THE Council resumed its sittings at its offices, 44, Hallam-street, W. Sir DONALD MACALISTER, the President, was in the chair.

Penal Case.

The Council considered the case of John Thomas Dickie, L.R.C.P. Edin., L.R.C.S. Edin., registered as of Lauriston-place, Edinburgh, who had been summoned to appear before the Council on the following charge: "That being a registered medical practitioner you were on May 4th, 1916, convicted in the High Court of Justiciary on two separate charges of culpable homicide by using instruments in the bodies of each of two pregnant women and causing them to abort, and were sentenced to five years' penal servitude."

A certificate of the conviction was handed in.

The PRESIDENT intimated the decision of the Council as follows: I have to announce that John Thomas Dickie having been proved to have been guilty of a felony, the Registrar has been directed to erase his name from the Medical Register.

Warning Notice in Regard to Uncertified Midwives.

Sir FRANCIS CHAMPNEYS moved:—

That it be remitted to the President, in consultation with the legal advisers of the Council, to draw up, for submission to the Council, a warning notice with regard to the "covering" by medical practitioners of uncertified women practising as midwives.

He said that the Central Midwives Board had had a great deal of trouble in regard to this matter. The Council fully appreciated the danger. There had been really an attempt to put on one side the Midwives Act. That Act had reduced puerperal mortality in a very marked degree. Until the last few years the statistics with regard to mortality from puerperal sepsis showed very slight improvement. In 1902 the number of deaths from this cause per 1,000,000 of females living in this country was 118. In 1907 the number had fallen to 81 per 1,000,000, and in 1911 to 72 per 1,000,000. Before 1902 the deaths from this cause per 1000 births were never less than 4·41. In 1907 that had fallen to 3·83 per 1000 births and in 1911 to 3·67 per 1000 births. In other words, the lives of 621 women were saved in 1907 which would have been lost in 1902. These figures showed that the passing of the Midwives Act was followed by a sudden and considerable fall in the mortality, and the improvement since then had been gradual although comparatively slight. He mentioned this to show the importance of getting the terms of the Midwives Act enforced. It was plain that the reduction of puerperal mortality coincided with the introduction of the Midwives Act. This had been attributed to the elimination of unqualified and uncertified midwives. It followed almost certainly that if the Act was suspended or not administered efficiently puerperal mortality would go up again. It was said that as it was war time one should not be strict in enforcing the observance of the Act, but in his view the fact that it was war time made it all the more important that more lives than ever should be saved and that the Act should be administered efficiently. He had been asked whether there was not a shortage of midwives. The answer was, on the whole there was no shortage. The total number of midwives on the roll was 37,231, and the total of practising midwives was estimated at 14,223. There were plenty of midwives in some districts and a deficiency in others. It was a question of distribution and not of absolute numbers, but it did not follow that if the number of midwives were considerably increased there would be districts where there was not still a deficiency. What the Council had to do was to see that the Act was efficiently administered, and that this covering of unqualified practice of midwives by medical men should cease. There were all sorts of reasons given in individual instances why the practitioner had covered the unqualified practice, but none of them held water. The General Medical Council had in a sense been entrusted with the health of the nation in so far as the standard of the medical profession was concerned, and it must take care that all safeguards were maintained. If the Council did not act in their administrative capacity they would run the risk of a return to the old days when the mortality from puerperal sepsis had not been cut down.

Mr. PYE-SMITH, in seconding, said that members of the Council appreciated the danger, but what was wanted was that the whole profession should have a like appreciation of it. It was very evident from what the Council had heard this session that some of the members of the profession did not appreciate the danger. Therefore, it was most desirable that a warning notice should issue.

Dr. MACDONALD said that there was no doubt that there was a great deal of ignorance on this matter on the part of general practitioners throughout the country. He thought some such step as this was necessary to bring the matter home to them. They did not understand how they had to deal with these uncertified midwives. If the position of affairs were clearly put before them they would not take the risk. He was sure that in country districts there was a want of certified women, and there must be something done to get them to those places. Certified women would not stay in the country districts.

Dr. NEWSHOLME remarked that important figures in his possession confirmed the statements made to the Council by Sir Francis Champneys. Although there had been a very great diminution in the mortality from puerperal sepsis, there had not been a corresponding diminution in other accidents at confinements. That was particularly true of country districts. He could only ascribe this to the fact that medical assistance was not given in the measure it ought to be given to help the midwife in an emergency. That ought not to be lost sight of. Steps must be taken to subsidise the midwives in districts where they could not earn a living wage. But such steps had been taken and were being taken. The Government in the last two or three years had offered to pay to any council half the amount of the expense of placing midwives in remote districts where otherwise they would not be able to earn a living wage. The Government had also offered even in towns to pay half the fee where the mother could not pay, if the council would pay the other half. In emergency cases the Government had offered to pay half the doctor's fee, so that given the coöperation of the Government with the county and borough councils there was no reason why this need should not be met at once. It was therefore desirable that the medical profession should know all about these arrangements.

Dr. TAYLOR asked whether the Council was to understand that the county councils had to pay their share if the Government paid the half.

Dr. NEWSHOLME said that that was being done, but not really to a very great extent. The movement was in its infancy, but it was growing.

Dr. NORMAN WALKER considered that ignorance was responsible for the great majority of lapses in this matter. Whilst some of the Council's warning notices were characterised by terse brevity, he thought that this one ought to be framed at length so as to make it quite clear what the Council had in view. Medical men should be given to understand what really was the "covering" referred to in the notice. There were many medical men who did not understand what the "covering" of the practice of uncertified midwives really meant.

Sir JOHN MOORE observed that Ireland had no Midwives Act, and he asked the sympathy of the Council for the unanimous desire of the profession to obtain such an Act there. There was no question with regard to the existence of such a wish.

The PRESIDENT said that the Midwives (Scotland) Act had come into operation. It contained some of the amendments which were deemed desirable for the English Act. The Scottish Act gave great powers for the subsidy of midwives in country districts. The Notification of Births Act was also made compulsory. So far as Government support was concerned in Scotland, England, and Wales there was no question of a lack of assistance in the improvement of the midwifery service in the country and more particularly in the rural districts. The Council sympathised with Sir John Moore as to the application of the Midwives Act to Ireland, but it must be remembered that when the English Act was passed Ireland desired to be left out.

Replying to a question by Sir HENRY MORRIS, Sir FRANCIS CHAMPNEYS said that he had seen a good many letters complaining bitterly of uncertified women on whom slack local authorities would not come down, while the justices would not act. There were ridiculous words in the statute which he desired to get rid of—"habitually and for gain." That nullified a good deal. No one exactly knew what "habitually" meant. Each bench had its own ideas, if it had any ideas at all. What was "gain"? Was it "money" only, or did it include other things? Nobody knew. The whole thing was confusion. An attempt had been made to get those words kept out of the Scottish Act. He did his best, but was stopped by a Member of Parliament who seemed to take charge of the vested interests. The result was that unfortunately the words were in the Scottish Act. In some cases the justices seemed to give a sort of tribute to the uncertified women in court. In one case they applauded the woman to the skies. They fined her some ridiculous sum and paid it from the bench. The action of such people really amounted to the propagation of puerperal fever. Those who administered the Act were extremely annoyed. Dr. Newsholme could not coerce these gentlemen. The justices and the local supervising authorities were independent. He congratulated his Scottish colleagues on the Council on getting their Act. After the 13 years of experience in England he thought that Ireland might get a better statute when it came. He looked forward to having the English Act amended in time and to having the campaign against puerperal fever carried on.

The motion was unanimously agreed to.

The PRESIDENT remarked that he would in drawing up the warning notice consult with the legal advisers of the Council and also with Sir Francis Champneys and Dr. Newsholme, and try to get a warning notice to meet with the approval of the Council.

The Finance Committee.

Mr. TOMES moved that the report of the Finance Committee be approved. The report stated that the income of the General and Branch Councils for the year ending Dec. 31st, 1915, was £10,040 17*s.* 3*d.*, and the expenditure during the year was £6,471 8*s.* 1*d.*, consequently there was a surplus of £3,569 9*s.* 2*d.* The report went on to state—

The income of the General Council was £2067 7*s.* 2*d.*, as against £1121 16*s.* 7*d.* in 1914, an increase of £945 10*s.* 7*d.* Practically the whole of this is due to the abnormal number of colonial and foreign registrations, which are credited to the General Council's account and not to the branches. Numerous colonial practitioners came over to help in the naval and military forces, and many Belgian doctors were enabled to maintain themselves by practising and to take the place of British practitioners who had gone to the front. The English and Scottish branches both show a decrease in fees, the former of £640 and the latter of £326, while the Irish branch shows a small increase of £36. It may be hoped that colonial and foreign registrations will continue to remain at a high figure for the present year, if not so high as before. As many senior students have been recalled from the colours to complete their studies, the British registrations should not show a large decrease at present. Probably, however, there are lean years ahead, and the Council's finances must be carefully watched if they are to continue satisfactory. The number of students registered was 1918, as against 1600 in 1914 and 1480 in 1913, out of the 1918 between 400 and 500 being women. This is highly satisfactory, and gives ground for the expectation that in due course the wastage of the war is likely to be made up.

The expenditure of the General Council shows a decrease of £1184 11*s.* The sessions, owing to their brevity, cost £321 less. The printing of Registers cost £342 less, as under the new contract there is a much greater saving when fresh entries are fewer. As no circulars were issued for the correction of the Register, this alone accounting for a saving of £263, the total economy is considerable. The cost of reporting on the Apothecaries' Hall examinations was £121 less; and £431 less was paid for interest on mortgage and loan. On the other hand, general printing cost about £60 more, the increase being due to increased prices during the war; £192 more was paid for rent, and house expenses were £62 higher. It is too soon to express a definite opinion as to the financial result of building the new premises; the Council was much handicapped by having to do the work at a largely increased cost due to the war, but it may be hoped that the annual expenditure will not be much increased, if at all, by the change. It is not yet possible to make a correct estimate of the current household expenses of the new building, which must necessarily show an increase in some directions, but there can be no doubt that comfort and convenience of the members, the staff, and the public will be vastly greater. The expenditure of the branches over which they have direct control (i.e., exclusive of the contributions required by the General Council) shows a small increase in the aggregate of £105.

The surplus of £3569 9*s.* 2*d.* for 1915, as compared with the surplus of £2299 18*s.* 4*d.* in 1916, shows an increase of £1263 10*s.* 10*d.*, due to a net increase of income of £190 2*s.* 9*d.* and a net decrease of expenditure of £1079 8*s.* 1*d.* This may be regarded as highly satisfactory for the time being; but the prospect of a probable decrease in fees for some years to come, and the cost of elections of Direct Representatives which are only postponed, lead the committee to offer a word of warning against undue optimism.

Mr. TOMES, in a brief comment on the report, said that although the financial position was satisfactory at the moment the committee had reason to fear that it would not remain so satisfactory in future years.

Sir HENRY MORRIS seconded, and the report was approved.

The Teaching of Medical Ethics.

Dr. MACKAY submitted a report by the Education Committee on the teaching of medical ethics. It was in the following terms:—

On Nov. 4th, 1915, the following resolution was adopted by the General Medical Council: "That it be remitted to the Education Committee, with the addition for this purpose of Dr. McVail and Dr. Newsholme, to report to the next meeting of Council on the education of medical students in the ethical relationships of medical practitioners to the State, to their patients, and to each other, and that the committee have power to make such inquiries on the subject as it deems advisable." A letter addressed by the Acting Registrar to all the teaching bodies elicited the information that in most cases the subject is dealt with as part of the regular work in the courses of forensic medicine and public health, to some extent also in other classes, and occasionally in special lectures. In a number of instances, however, no regular instruction has hitherto been given. The committee are of opinion that it is advisable that the subject should not be neglected in the education of the medical student; but they recognise that the special arrangements adopted for conveying the instruction may naturally vary among the different bodies. They propose, therefore, that a general recommendation dealing with the teaching of medical ethics be added to the "resolution of the General Medical Council in regard to professional education" as adopted on June 6th, 1912, as follows, viz.:—"Instruction should be given, in the courses of Forensic Medicine and Public Health, or otherwise, on the duties which devolve upon practitioners in their relationship to the State, and on the generally recognised rules of medical ethics. Attention should be called to all notices on these subjects issued by the General Medical Council."

In moving that the general recommendation contained in the last paragraph of the report should be adopted Dr. MACKAY said that it had not been thought necessary to print in detail the letters which had been received. The committee was unanimously of opinion that one of the aspects of the subject with which the recommendation dealt was of the greatest importance—the ethical relation of the medical practitioner to the State. The recommendation was put forward as one of a general kind. The committee was of opinion that the subject should not be neglected. It did not think it advisable to suggest any particular method of dealing with the subject. Only it should not be neglected in the medical curriculum. The committee also thought it right, considering the importance of the various notices dealing with questions of medical ethics which had been issued by the Council, that the attention of future practitioners should be called to them. That would safeguard them later on when there was a danger of falling into error. It was of advantage that pitfalls which lay in their way should be clearly pointed out to them.

Dr. NORMAN MOORE seconded. It was most natural, he said, that the Council should draw the attention of the teaching bodies to this matter. The Council did not force the recommendation on the qualifying bodies, but it certainly laid it before them as desirable.

The recommendation of the committee was adopted.

Dental Education.

Mr. TOMES brought up a report from the Dental Education and Examination Committee which dealt with several matters. He said that an application had been received from the University of St. Andrews for the recognition of a dental diploma instituted by it, the title of which was Licentiateship in Dental Surgery. The curriculum arranged and the examinations proposed carried out the recommendations of the Council. In accordance with the opinions of the committee he moved:—

That the licence be recognised for registration in the Dentists Register.

Dr. KNOX seconded, and the motion was agreed to.

A motion by Mr. TOMES for the registration in the colonial list of the Dentists Register of a diplomate of Adelaide University who had been offered a commission in the army was agreed to.

In connexion with this application Dr. SAUNDBY remarked that the dental profession deserved a public tribute for the work its members had done in connexion with the army.

Mr. TOMES then proceeded to deal with the portion of the report relating to the dental curriculum. He said that more than a year ago a motion made to the Council noted that the number of dentists on the Dentists Register had not increased since the Register was formed, and expressed the view that the licensing bodies should be asked to make suggestions as to "any modifications or curtailments of the curriculum which in their view may be practicable without lowering the standard of dental practice." The motion was referred to the Dental Education and Examination Committee for consideration. The committee considered that, whilst the original resolution suggested that "modifications or curtailments of the curriculum" might be desirable, the resolution obviously opened the question not merely of the curriculum, but of any other causes which might be at work to deter students from entering, and the questions submitted to the licensing and educational bodies were therefore extended in this direction. An interim report was issued in November, 1915, which contained the questions circulated, but the answers at that time had not all been received. These answers were now complete. There was absolute unanimity amongst the answers in attributing any shortage, if it existed—some thought there was no shortage—mainly to the inadequacy of the Dentists Act, and in the opinion of the majority this was the sole cause. This was also the unanimous opinion of the committee. With regard to the effect of the preliminary examinations, which were the same as those required of medical students, one body alone considered them too stringent. The others agreed that they were only deterrent to those unfit to enter upon professional study with advantage. But several bodies were of opinion that there should be more opportunity given for option in the subjects of examination, and, especially, that Latin should be an optional subject. The committee, without expressing any opinion upon the subjects of the Preliminary Examination, were unanimous in considering that it should be the same for dental as for medical students. With regard to the length and stringency of the curriculum as a deterrent, there was a general opinion expressed that its effect is slight as compared with that of the legal position and that without lowering the standard of dental practice no curtailment of the four years required was possible. But many suggestions, some of them entering into full detail, were made for the improvement of the curriculum and for some rearrangement of the examinations. In general terms the modifications suggested were in the direction of closer adaptation to the special needs of the dental practitioner and involved material limitation of teaching in general subjects, such as anatomy, physiology, surgery, and medicine. In face of the body of opinion offered the committee felt that these suggestions should be carefully coördinated and the committee's recommendations on the subject of the dental curriculum be considered in relation to them. This, however, involved work that would take time and could not be reported upon at the present session. The members of the committee regretted that they saw no means which the Council could adopt which would be effective in preventing the public being deceived by inability to distinguish between qualified and unqualified practitioners of dentistry, short of attempting to procure an amendment of the Dentists Act, a course which at the present juncture did not appear practicable. He moved that the report be approved.

Dr. SAUNDBY asked whether any of the bodies called attention to the cost of the dental curriculum. A medical student took his curriculum at a less cost than a dental student—sometimes almost as much as £100.

Mr. TOMES replied that certain bodies did call attention to that point. So far as the Council was concerned, the fee was a matter to be fixed by the educational body or school.

Dr. NEWSHOLME moved as an amendment that the report should be referred back to the committee. The real question was whether any modifications or curtailments of the curriculum were desirable without lowering the standard of dental practice. The committee had not expressed an opinion on that essential point. He thought that the committee should have satisfied itself whether there was a deficiency of dental practitioners or not. It was the case that although the number of dental practitioners on the Register had not increased, yet the number of those who held dental licences had increased, but it could not be maintained that the number had increased in proportion to the population in the last 30 years. The State had a very large stake in this matter at the present time. It had made itself responsible for the medical treatment roughly of a third of the population of the United Kingdom. That medical treatment was often rendered useless owing to the presence of bad teeth. Then there was the medical inspection of school children. A large proportion of the children were found to be suffering from dental caries. In a great many instances nothing had been done but record the statistics. A large part of the population of England and Wales were, moreover, receiving a dental treatment which was unsatisfactory and detrimental to public health. He thought that there were 5000 qualified dentists in the country and something like 20,000 unqualified dentists. That was a grave reflection on someone. It was a grave reflection upon the Council until it had taken every practical step to get an increased number of qualified dentists. The Council was entitled to have a report from the Dental Education and Examination Committee on certain questions. Firstly, it was entitled to have its opinion on the question whether there was a shortage of dental surgeons; secondly, it was entitled to an opinion whether modifications of the curriculum were practicable; and, thirdly, whether the curtailment of the curriculum might not be feasible.

Sir BERTRAM WINDLE seconded the amendment. He remarked that in practice the qualified dentist was at one disadvantage because he was under restrictions which the unqualified man was not. Until they had this cardinal matter put right the Council could not expect any increase in the number of qualified dental practitioners. He wanted to say this, that the institution which he belonged to recommended the shortening of the curriculum to three years, but only temporarily, in order that the shortage in the number of dental practitioners might be made up. An adequate supply of dentists was of extreme importance to public health. The committee, he thought, should not take the attitude that nothing could be done. After the war there would be a shout for social legislation, and those who had shouted loudest would be first served.

Sir HENRY MORRIS said that there were many suggestions as to modifying the dental curriculum so as to make it more absolutely applicable to the career of the dentist after qualification, and thereby to make it more easy to bring it and the qualification which followed it within the period of four years, instead of having that period prolonged, as it was sometimes now, beyond four years. That was feasible, and this would be brought out when the various reports from the licensing bodies were coördinated. It would be of assistance to the Council if it had statistics relating to the proportion of dentists to the population. Instead of the amendment referring the report back to the committee he would suggest a motion in these words: "That a copy of the report be sent out to the licensing authorities and dental schools, that the committee consider any further recommendations that may be received from them on the subject of the curriculum, and that the committee be instructed to prepare for submission to the Council such proposals as the committee may deem desirable for the modification of the curriculum."

Dr. NEWSHOLME did not think that the report should be sent to the licensing bodies, but otherwise he had no objection to what Sir Henry Morris suggested.

Dr. MACKAY pointed out that the report was only an interim one. The wisest plan would be that Mr. Tomes should not insist upon the approval of the report, and that Dr. Newsholme and Sir Bertram Windle should not insist upon referring it back to the committee. The committee had told the Council that an alteration of the law was required and that nothing else could suffice. It was for the Council to say whether they would approach the Government on the subject. He was ready to do that now. As regarded the curriculum, he hoped that the Council would never insist on the alteration of the curriculum in the way of reducing it so as to attract greater numbers of students. If an alteration was proposed it must be to make the course of study more effective and more suited to its purpose. The Dental Education and Examination Committee was considering the subject. It would not be wise to have an alteration which was based on the notion that it would make entry to the profession of dentistry easier. Let the committee finish its work, and then the subject could be discussed.

Dr. NEWSHOLME then substituted for his amendment the following: "That the committee be requested to consider any further communications which may be received from the licensing authorities and the dental schools on the subject of the curriculum, and that it be instructed to prepare for submission to the Council such proposals as it deems desirable for the modification of the curriculum."

Mr. TOMES withdrew his motion that the report be approved.

The substituted amendment of Dr. Newsholme was then put as a motion and was agreed to.

Mr. HODSDON moved: "That the Lord President of the Council be informed that in the opinion of the General Medical Council it is urgently necessary in the public interest that steps be taken to amend the Dentists Act in order that the public may be able to distinguish qualified from unqualified practitioners as dentists."

Dr. LANGLEY BROWNE seconded.

Mr. TOMES suggested that a memorandum should accompany the resolution to the Lord President setting out the arguments on which it was based.

The motion was agreed to.

A motion proposed by Sir BERTRAM WINDLE to the effect that the committee be instructed to obtain statistics as to the relative cost of medical and dental education was also carried. It was also agreed, on the motion of Dr. CATON, that Dr. Newsholme should be added to the members of the committee.

Apothecaries' Hall of Ireland.

A report was received from the Examination Committee on various matters relating to the Apothecaries' Hall of Ireland.

Indian Subordinate Medical Department.

A report was received from the Examination Committee on communications from the India Office in regard to a revised prospectus of the Assistant Surgeon Branch of the Indian Subordinate Medical Department. The report was in the following terms:—

In a report, dated June 2nd, 1915, the Examination Committee informed the General Council that it had been learned from the India Office that the course of professional study for the Indian Subordinate Medical Service would be extended in the future from four to five years, and that prior to its commencement candidates would be required to pass a preliminary examination recognised by the General Medical Council. On Nov. 16th, 1915, the India Office forwarded for the information of the General Council a proof copy of the revised prospectus relating to the Military Assistant Surgeon Branch of the Indian Subordinate Medical Department. In a later communication, dated April 24th, 1916, however, the India Office intimated that in consequence of certain difficulties which had arisen, it had been decided to defer for another year the introduction of the scheme for improving the education and training of military assistant surgeons. The Examination Committee do not propose to offer any observations on the revised prospectus for the consideration of the General Council at this stage.

Public Health Committee.

Sir JOHN MOORE presented a short report from the Public Health Committee in which it was stated that the further consideration of the statistics relating to the examinations for qualifications in public health would be deferred until the next session of the Council.

Pharmacopœia Committee.

The following report was received from the Pharmacopœia Committee:—

1. The number of copies of the British Pharmacopœia, 1914, which were sold by the publishers between Nov. 1st, 1915, and May 20th, 1916, was 960. The total number sold since Jan. 1st, 1915, is thus about 25,400 copies. Of the second issue of 10,000 copies published in May, 1915, about 3200 copies remain in stock at the present date.

2. The editors have discovered a misprint on page 29, under the heading "Adeps Lanæ." In the eighth line from the foot of the page for the words "0·2 gramme" should be read the words "2·0 grammes." This error will be corrected in the next impression.

3. The recommendation contained in the committee's report of Nov. 2nd, 1915, having been approved by the Council, a communication was addressed to the Lord President, suggesting that, in the public interest, all preparations or admixtures, containing 0·75 or more per cent. of morphine, should be included in Part I. of the Schedule of the Pharmacy Act. The suggestion was conveyed by the Lord President to the Council of the Pharmaceutical Society of Great Britain. The Council of the Society, in virtue of its powers under the Pharmacy Acts, submitted a resolution in favour of the suggested amendment of the Schedule for the approval of the Privy Council. An Order in Council was thereupon issued on Feb. 9th, 1916, which enacts the amendment in the manner prescribed by law. The Executive Committee has already expressed its gratificaton at the action taken by the Privy Council and by the Pharmaceutical Society in this important matter. The Pharmacopœia Committee desires also to express its acknowledgments of the action which has been taken at its suggestion. All tinctures of opium, whether described as "Laudanum B.P. 1898" or otherwise, which contain three-fourths of 1 per cent. of morphine, must now be sold to the public only under the more stringent conditions attached to the sale of the poisons in the first part of the Schedule.

Students' Registration Committee.—A report was received from the Students' Registration Committee.

Appointment of Committees.

Business Committee: Dr. Norman Moore (chairman), the President, Sir Henry Morris, Dr. Norman Walker, and Dr. Little.

Pharmacopœia Committee: The President (chairman), Dr. Norman Moore, Sir George Philipson, Dr. Caton, Dr. Barrs, Dr. Cash, Sir John Moore, Dr. Norman Walker, and Dr. Little.

Finance Committee: Mr. Tomes (chairman), the President, Sir Henry Morris, Mr. Hodsdon, and Dr. Little.

Dental Committee: The President (chairman), Sir Henry Morris, Mr. Tomes, Mr. Hodsdon, and Sir A. Chance.

Dental Education and Examination Committee: Mr. Tomes (chairman), the President, Sir Henry Morris, Mr. Hodsdon, Dr. Knox, Sir Arthur Chance, and Dr. Symington.

Students Registration Committee: Dr. Norman Moore (chairman), the President, Dr. Langley Browne, Dr. Mackay, Dr. Norman Walker, Sir Bertram Windle, and Dr. Kidd.

Penal Cases Committee: Dr. Saundby, Mr. Tomes, Dr. Norman Walker, and Dr. Little.

Appointment of Registrar.—Lieutenant-Colonel Norman King was reappointed General Registrar.

The President having been thanked for his services in the chair, the summer session of the Council concluded.

New Inventions.

USE OF CURRENT FROM THE MAINS FOR MEDICAL PURPOSES.

THE Medical Supply Association, Gray's Inn-road, London, W.C., has introduced a device for safely utilising the main supply of electricity for medical purposes, such as galvanisation, ionisation, electrolysis, and muscle reaction testing. Hitherto constant current batteries have been used for medical work with their disadvantages of limited power, coarse adjustment, heavy weight, heavy expense and delay in re-charging, and the risk of corroding of the terminals.



These disadvantages are not present with the "Galvanoset," which may be attached to any electric light holder. The current is then conducted through two suitable resistances into a vessel of water by means of two electrically indestructible electrodes, which are placed on opposite sides of the vessel. At right angles to these two electrodes a second pair of electrodes is placed in the water; these are connected to the patient. As long as the two "patient" electrodes remain at right angles to the two "supply" electrodes no current will be obtained, as the electrical potential in this position will be zero. The supply terminals are mounted on a disc of vulcanite which is free to rotate over a graduated celluloid scale. If this disc is now rotated from its right angle or zero position, any desired current can be obtained from minimum to maximum by the most gradual increase. At the same time it is impossible for the patient to get into direct contact with either the positive or negative side of the supply. The weight of the complete apparatus is 7 lb. It can be used either on continuous or alternating main current of any voltage. In working from alternating current one of the electrodes is replaced by one of a special metal.

THE LANCET.

LONDON: SATURDAY, JUNE 10, 1916.

Medical Practitioners and the Military Service Acts.

WE stated last week the position of medical men in relation to the obligation imposed upon all citizens by the provisions of the Military Service Acts. A circular which has now been issued by the Local Government Board to the local tribunals and appeal tribunals under the Acts sets out clearly the course which medical practitioners who come within the operation of the Acts and who wish to be exempted must now adopt. The new Military Service Act, an extension, with continued operation, of its predecessor, contains a section in which are set out the provisions as to exemptions from service under the Acts. The section is as follows:—

Regulations made under the second schedule to the principal Act shall provide for the establishment of professional committees to deal with claims for exemption made by duly qualified medical practitioners; and any application made by such a medical practitioner on any ground, other than that of conscientious objection, for a certificate of exemption shall be referred by the tribunal to whom it is made to such a committee in accordance with those regulations; and the recommendation of the committee on the application shall be binding on any tribunal constituted under the principal Act.

The new regulations, made necessary by the extended Act, have now been issued by the Local Government Board to all local tribunals and appeal tribunals, and the particular regulation affecting medical practitioners is very clearly worded, and gives effect to what we were able last week to say would be the position. It runs:—

Medical practitioners who come within the operation of the Acts and wish to be exempted must as hitherto apply to the appropriate local tribunal. But in view of the special position of the medical profession, their services being in great demand both by the army and by the civil population, the Act makes provision for applications for exemption from medical practitioners being considered by professional committees which will be fully aware of the special arrangements which can be made in any case, and will be able to deal with each case from the point of view of the needs and resources of the country as a whole, not simply of those of a particular locality. It has therefore been provided that each application for exemption by, or in respect of, a duly qualified medical practitioner, other than an application solely on conscientious grounds, shall be forthwith referred by the local tribunal to a central professional committee, and that the recommendation of this committee shall be binding on the tribunal. If an application is made by a medical practitioner both on conscientious and on other grounds, it is to be referred forthwith to the professional committee for their recommendation on the other grounds. On receipt of the recommendation from the professional committee the tribunal will then, unless the recommendation is for absolute exemption, consider the application on conscientious grounds, after due notice, and will decide whether the certificate, if any, should be confined to the recommendation made by the professional committee in respect of the other grounds, or whether it should be modified in favour of the applicant in view of the conscientious objection. The tribunal will not in any case be able to grant a certificate less favourable to the applicant than has been recommended by the professional committee.

The separate regulations concerned in the exemption of medical practitioners will be found on p. 1195 of this issue of THE LANCET. It will be observed that the numbers of the Central Professional Committee are defined in these regulations; that the recognition of the Army Council, which has already been granted to the three existing committees, is required; and that the central body is given power to refer cases to local professional committees for investigation if this is thought desirable. The cases of practitioners on the residential or teaching staffs of hospitals situated within the Administrative County of London are, by the regulations, made the particular charge of the Committee of Reference of the Royal College of Physicians of London and the Royal College of Surgeons of England, who will advise also on the case of any English or Welsh practitioner at the request of the Army Council or the Central Professional Committee. Communications to this body concerning practitioners in England and Wales should be addressed to the Secretary, Central Medical War Committee, 429, Strand, London, W.C. The Scottish Medical Service Emergency Committee is the analogous statutory body for Scotland.

A circular issued to local and appeal tribunals by the Local Government Board points out that the Act recently passed, while making a new demand on the administrative ability of the country, gives force to a national endeavour to secure a finer adjustment between the rival claims of military, civilian, and professional requirements than has ever been attempted before at any time or in any country. We think that this praise of the new legislation is well deserved, and that the adjustment, which has to be effected under conditions of extreme urgency, is in the matter of the medical profession being bravely carried out. The circular strikes exactly the right note when it points out that the services of the medical profession are in great demand by the navy, army, and civil population. It is because the medical practitioner is wanted in all three ways as a medical practitioner that his professional position is totally different from that of other civilians, who have mostly to acquire a new training before their help is of first-class value. This situation warrants the differential treatment now offered to doctors. The work of the Central Professional Committee will be difficult; the responsibility accepted by the Central Medical War Committee, the Committee of Reference of the English Royal Colleges, and the Scottish Medical Service Emergency Committee is very heavy; but we have every reason to believe that the work

will be done to the satisfaction of the naval and military services and of the public, while medical practitioners are afforded a proper opportunity of explaining their position to persons who will be able to appreciate professional situations and complications. It is to be remembered that no medical man of military age who is enrolled with one of the Committees, or who enrols before June 24th, is required to apply for exemption. The production of his certificate of enrolment is all that is necessary in the event of a notice calling him up being sent to him; such message will only have been sent through some oversight. It is well, too, to recollect that the man who remains unenrolled after June 24th will no longer have the chance of serving for one year only, or of drawing the pay and allowances given to the present temporary lieutenant. If taken for service the unenrolled man will serve for the duration of the war at the ordinary pay of the particular branch of the service into which he is received. Consequently it would seem unwise for any medical man of military age to remain unenrolled.

Injuries of the Brain in War.

HIPPOCRATES laid it down that an injury of the brain was always deadly, though it is not quite certain that the word he employs necessarily means fatal. It has, however, for many years been recognised that occasionally patients may recover from even very severe injuries of the brain, but it was only with the advent of the recognition of the bacterial origin of suppuration that the surgeon has been able to treat brain injuries intelligently. The present war has brought before surgeons an immense number of cases in which the skull and brain have suffered injury; in fact, it may be said with confidence that never before have surgeons engaged in the treatment of the wounded been confronted with such a variety and concourse of cases in which some damage has been done to the brain. Surgeons have been compelled to reconsider the question as to the best methods of dealing with these injuries, and a paper on this subject in THE LANCET of May 20th was very timely. In it Major ALEXANDER DON deals with the treatment of head injuries at a casualty clearing station, attention being given alike to the nature of the injury and the possibilities of the station. At present the conditions in Flanders are somewhat different from those likely to obtain near a more active front, though no one supposes that the conditions need last. In ordinary circumstances the casualty clearing station is a movable hospital following at a certain distance behind an advancing line or retiring if the front retires, but the introduction of trench warfare has modified this. Where the front has not materially changed for 18 months the clearing station has become fixed, and therefore in some degree the conditions have approached to those which are to be found in a base hospital, a state of affairs which may at any moment be altered. Cases of head injury often arrive at the casualty clearing station in an unconscious state, and this is specially noticeable in those who have been carried in the lying position over the 20 or 30 miles separating the clearing station from the front. Those who have been brought in the sitting position much less frequently show signs of collapse. This collapse, following a long drive in a motor ambulance over bad roads, is to be attributed to the repeated small shocks caused by the jolting of the motor-car. As a rule, and with little more than intelligent nursing the patients recover from the collapse within three or four hours, and they may then be taken to the operating theatre; operation is not recommended on subjects which do not react soon.

What are the limits of the operations that should be performed at the clearing station? It is clear that no sharp lines can be drawn, but certain limits will suggest themselves. It is necessary that where increased intracranial tension is present provision should be made for its relief. The opening in the skull may need to be made larger, and if necessary a trephine is used; the wound of the dura mater may be enlarged so that blood-clot and any obvious splinters of bone may be removed, or any foreign bodies that are visible. But it is in the highest degree undesirable that any extensive search should be made for foreign bodies, and probing is not merely useless, it is often actively harmful. To obtain due access to the wounded skull and brain two forms of incision are employed; in one a large semicircular flap is made, and in the other there is little more than the linear enlargement of the scalp wound. While the large flap is undoubtedly the more convenient for any extensive operation on the brain such as may reasonably be done at a base hospital, the linear incision is much more suitable for the early treatment at the clearing station. This is the opinion expressed by Major DON, and with it we agree. If increased intracranial pressure is present from effused blood, opening of the dura mater will relieve the pressure. When we have mentioned these operations we have given almost all that can be done as a rule at a clearing station. When an X ray apparatus is available—and this is rarely the case in a mobile hospital—the extent of the work may in times of quiet be somewhat increased, and irregular septic masses or fragments of shell may be removed; but as a rule all these elaborate operations on the brain are done with better chance of success at base hospitals or in special hospitals, where the patients can remain for an indefinite period.

The time at the disposal of the surgeons at the casualty clearing station will have much influence on the scope of the operations performed, an obvious fact which has been entirely forgotten by some of the critics of the administration of medical affairs at the front—indeed, what have some of these persons not forgotten or imagined? When a great engagement is in progress the number of cases arriving at the clearing station will be so great that the surgeon will have to be content in many instances with doing little more than redressing the wounds, for he will have to send on to the base hospital as rapidly as possible

those patients who are best able, in his opinion, to stand the journey. For if he does not do so his hospital will speedily become overcrowded and he will be unable to admit any of the ceaseless stream of new cases. Major DON'S paper is of great interest because he brings these points out; to those who know them they are of course very obvious, but for civilians, medical as well as lay, their significance might easily be lost. It may well be that some differences of opinion will be found to exist in respect of some of Major DON'S views, but we believe that the conclusions at which he has arrived will be endorsed in the main by those who have had experience in the treatment of wounds of the brain in similar circumstances. And the whole subject is one of paramount importance to the army.

Annotations.

"Ne quid nimis."

THE BIRTHDAY HONOURS.

FOR the most part the list of Birthday Honours contains the names of those who have won distinction in connexion with the war. These honours will be found noted in another column. But quite directly connected with the war is the Privy Councillorship conferred upon Dr. Christopher Addison, M.P., Parliamentary Secretary to the Ministry of Munitions (who was at one time lecturer in anatomy in the medical schools of Charing Cross and St. Bartholomew's Hospitals), and the knighthoods granted to Dr. Armand Marc Ruffer, C.M.G., and Professor Nestor Tirard. Sir Armand Ruffer is President of the Sanitary Maritime and Quarantine Council of Egypt, and it is largely owing to his careful supervision that Egypt has remained of late years so remarkably free from epidemic disease. Sir Nestor Tirard is professor of the principles and practice of medicine in King's College, and senior physician to King's College Hospital, as well as commandant of the 3rd London General Hospital. His labours as the medical editor of the British Pharmacopœia and as secretary for 20 years of the Pharmaceutical Committee of the General Medical Council are well known to all the medical profession. Dr. Frederick Montizambert, I.S.O., Director-General of Public Health of Canada, has been awarded a C.M.G., and Fleet-Surgeon Ernest Courtney Lomas, R.N., D.S.O., Surgeon-General John Jeffrys Dennis, R.N., Colonel Alfred Percy Blenkinsop, Assistant Director-General, A.M.S., and Major Percy Samuel Lelean, Assistant Professor, Royal Army Medical College, have been made C.B.'s. Dr. Noel Bardswell, medical superintendent of King Edward VII. Sanatorium, and Dr. Frederick Hewett, Surgeon Apothecary to the King, have been made members of the Fourth Class of the Victorian Order. In the Indian List, Major Frederick Norman White, Assistant Director-General, I.M.S. (Sanitary), Lieutenant-Colonel James Jackson, I.M.S., Inspector-General of Prisons, Bombay, and Captain Alexander Gillilan Johnson Macilwaine, R.A.M.C., have received the C.I.E., and Mr. Henry Martyn Newton, F.R.C.S., Dr. Robert George Robson, and the Rev. Peter Cullen, Brigade-Surgeon Lieutenant-Colonel, I.M.S. (retired), have been awarded the Kaisar-i-Hind Gold Medal. Sir Bernard Mallet, Registrar-General, who becomes K.C.B., should be included in the list of medical honours, having regard to the close relation of his work to public medicine. To all these gentlemen we tender our sincere congratulations, as well as to Sir George Beilby, F.R.S., whose studies on fuel economy and smoke prevention have now been fittingly rewarded. Also outside the medical profession we note with satisfaction the names of Sir Savile Crossley, who has been raised to the peerage, and Mr. C. Arthur Pearson, who has been made a baronet. Both are well known for their work in the relief of suffering and physical disability.

PROTOZOAL INFECTIONS OF THE INTESTINE.

WE print in this issue four papers dealing with the subject of protozoal infections of the intestine. Dysentery and diarrhœa have caused much invaliding in the British forces engaged in the war, and have at the same time supplied a large amount of clinical and pathological material for special study. Among the various intestinal protozoa which have come of late into greater prominence is the Lamblia intestinalis. Its pathogenicity in man has not hitherto been clearly established, but there seems to be some support given to this view in the papers we now publish. Up to a recent date most of the cases reported came from Indo-China, and to a much smaller extent from the shores of the Mediterranean, though some cases have been observed in the Panama Canal zone. In one of the papers mention is made of a soldier who contracted his infection in Flanders. Lambliasis is not uncommon among rats and mice, which have been accused of conveying the disease to man. Some instances have been published in which children have suffered after eating food to which rats and mice had had access. Perhaps the Flanders case referred to above may have arisen in this way, since the trenches are known to be infested with rats, which make raids upon the soldiers' food stores. Lambliasis may coexist with amœbiasis and other protozoal infections. The treatment seems to have been, so far, not very satisfactory, but Miss Annie Porter, D.Sc., mentions in her paper that good results had been secured in some cases by the administration of bismuth salicylate, and that the organisms and their cysts had disappeared from the stools. It seems to us that this method of treatment deserves to be given a more extended trial, with a view of getting rid of an infection which has been shown to be very persistent.

ASH AS AN ASSET.

IN an annotation which appeared in THE LANCET just 12 years ago attention was drawn to the enormous waste of valuable mineral salts through casting the ash of tobacco, burnt in the cigar, pipe, and cigarette, to the winds. The calculation was quoted that a ton of tobacco withdraws over a hundredweight of mineral constituents from an acre of land. Amongst these constituents are potash and phosphoric acid. In view of the shortage particularly of potash, owing to the supplies from the Stassfurt mines in Germany being cut off, the question assumes a new importance, and with this view in mind a writer in the *Chemical News* of June 2nd gives some interesting facts concerning the amount of mineral salts wasted annually in this manner by the smoking public in this country. Mr. B. A.

Burrell, F.I.C., points out that the ash of tobacco amounts to 30 per cent., and that one-fifth of this, or 6 per cent., is potash. The results of a systematic collecting of tobacco ash were as follows. From the smoke-room of a club, collected for eight days, 9¾ ounces; from the lounge of a large hotel, collected for four days, 13 ounces; from a large restaurant, collected for ten days, 2 lb. 8 ounces; from a music-hall, one-tenth part of the auditorium, one performance only, 4 ounces. Coming to practical conclusions, he finds, from particulars supplied to him by a firm of tobacco and cigar importers, that the total consumption of tobacco and cigars in this country amounts to 44,529 tons, which when burnt gives an ash weighing 13,359 tons. Assuming that this ash contains one-fifth of its weight of potash, the yield would be 2672 tons. Kainit, the potassic mineral brought up from the mines in Stassfurt in Germany, contains 12·5 per cent. of potash; so there may be lost in tobacco ash an equivalent of 21,376 tons of kainit. At the price of this mineral in the spring of 1914, this would mean throwing away over £50,000 worth of kainit, but in the following spring of 1915 the price of kainit was trebled. While these facts may well arrest our attention, the difficulty presented of effectively collecting tobacco ash would seem to be very great. The success of such an undertaking would rest entirely on the unanimous action—and it would have to be unanimous if the figures quoted are to be realised—of millions of agents. Even with such a unanimous action secured the difficulties of capturing every ounce of the ash formed in every cigarette, cigar, and pipe would probably render the calculation void. However, so many reforms have become possible and practicable under the incontestable demands of war that the suggestion to effect the economy indicated may be seriously considered. It may be added that the shortage of potash, amongst other things, is a real and distinct inconvenience in medical practice, apart from the necessities of agriculture.

THE INFLUENCE OF DIET ON THE DEVELOPMENT OF CAMMIDGE'S REACTION IN THE URINE.

BEING firm believers in the value of Cammidge's reaction as a test of the functional efficiency of the pancreas, Dr. C. J. C. Van Hoogenhuyze and Dr. S. Nagasaki have recently published[1] some investigations in which they show that the presence or absence of this urinary test depends in many cases upon the diet. They point out that the mother-substance that gives rise to the crystals produced in the reaction is a dextrin-like body, possibly isomaltose, that is present in normal urine, a point proved by Pekelharing and Van Hoogenhuyze. Further, they find that the reaction can be caused to appear or to disappear by increasing or diminishing the amount of carbohydrate in the patient's diet. This explains how it is that the urine of normal persons has often been found to give a positive Cammidge's reaction; the conclusion drawn is that dextrinuria is not necessarily pathological, a sign of disease. Naturally it is the amount of the dextrinuria that is important here; a small amount may be regarded as not abnormal, while a larger amount will be held to throw suspicion on the functional efficiency of the pancreas. The authors quote a number of instances in which the reaction could be caused to appear or disappear in the urine of hospital patients under treatment for such surgical complaints as hernia or fracture of bones, in whom there was presumably no disease of the pancreas. Thus one patient on a mixed diet of about 1800 calories gave a positive reaction when two-thirds of his diet, reckoned in calories, took the form of carbohydrate; another, when the carbohydrate reached 60 per cent., a third at 55 per cent., a fourth at 47 per cent. Each of these patients, when placed on a mixed diet with relatively less carbohydrate in it, failed to give Cammidge's reaction. The authors repeat their conclusion that a moderate amount of dextrinuria on an average mixed diet must be regarded as within the normal. They point out that the urinary dextrin can be determined by Benedict's method, which depends upon estimation of the reducing power of the urine both before and after boiling with hydrochloric acid, a process that breaks up the dextrin into reducing substances. They draw the provisional conclusion that if the difference between these two figures is 3·5 or less, the pancreas may be presumed to be normal.

[1] Nederl. Tijdschr. voor Geneesk., Amsterdam, 1916, i., 1260.

PROCEDURE FOR INSURANCE COMMITTEES UNDER THE MEDICAL BENEFIT REGULATIONS.

IN order to secure the adoption of a suitable procedure by Insurance Committees in dealing with cases under the Medical Benefit Regulations in a judicial or semi-judicial capacity, the Insurance Commissioners issued recently a memorandum on the subject. The memorandum deals with the procedure to be followed in questions which stand referred to Medical Benefit Subcommittees under Article 45 of the Medical Benefit Regulations, 1913, which include those arising between an insured person and his panel practitioner, and those other questions which under the same regulation an Insurance Committee may refer to the Medical Benefit Subcommittee if it thinks fit; in questions under Article 40 of the Regulations of 1913 with regard to excessive prescribing—this procedure is applicable to cases relating to drugs and appliances ordered before January, 1916; in questions under Article 9 of the Regulations of 1916; to investigations, that is to say, relating to drugs ordered since 1915; and in questions arising under Article 50, which provides the machinery for the determination of questions as to whether in any particular case an operation or other service is of a kind which can consistently with the best interests of the patient be properly performed by a general practitioner of ordinary professional competence and skill. Uniformity of procedure and a correct understanding by committees and subcommittees of the points on which their inquiries should turn are, it need hardly be said, of considerable importance to the medical practitioners concerned.

THE SOFTENING OF LARD.

A CERTAIN change in lard has been frequently noticed, but it has hitherto not attracted much attention in medical literature. This softening has already been described by Professor Brusaferro in a work on the "Hygiene of Meat," and he expresses there the opinion that the cause of the change was to be found in insufficient saltness, either because the necessary amount of salt had not been added or because the lard being kept in a damp place had lost salt. With the exception of loss of consistency lard thus changed seems normal, but its reaction is acid, whereas that of fresh lard is

neutral. But this acid reaction is not a special characteristic of softened lard, as it is observed in rancid or stale specimens, and in the latter is compatible with a good state of preservation. Many samples of softened lard are without any trace of rancidity, but the latter is an almost invariable concomitant in an advanced stage of the change. The great disparity of opinion in experts on the cause, the absolute silence on the question in treatises on hygiene and chemistry, and the necessity of investigating from a sanitary point of view any such change in an aliment of such importance have led Dr. C. Ninni and Dr. F. Russi, health officers to the municipality of Naples, to investigate the subject, and the results of their microscopical, bacteriological, and chemical researches are now published in a recent issue of the *Annali d'Igiene* (Rome, April 30th, No. 4). From these it appears that softened lard is characterised microscopically by the presence of a few connecting fibrils, organically by a marked diminution in consistency, and chemically by scantiness of non-fatty residue, water, and salt. Rancidity has nothing in common with the softening. The cause of the change is to be found in the presence of microbes belonging to the class of hyphomycetes associated with bacteria (Oospora lardaria and Micrococcus tetragenus) which, owing to insufficient saltness and special surroundings of temperature and moisture, develop proteolytic activity which is expended on the connecting tissue. From the point of view of nutritive value, softened lard is almost as efficient as stale lard in a good state of preservation, and from a hygienic point of view may be safely consumed provided it is not rancid, especially if cooked and therefore sterilised.

MENINGOCOCCAL CONJUNCTIVITIS.

IN the *Medical Journal of Australia* of April 1st Dr. T. C. Ker and Dr. R. O. Douglas have described a rare manifestation of meningococcal infection—conjunctivitis. On Sept. 10th, 1915, a nurse on night duty in the meningococcal isolation block at the Bendigo Hospital "felt a strained feeling" in her right eye. Next morning the eye was sore, and there was a grating sensation under the lid. That night there was slight discharge, and on examination the conjunctiva was found to be red and engorged. Both lids were inflamed, and there was a profuse purulent discharge. Smears and cultures on glucose-agar were made from the lower fornix of the conjunctiva. The smears showed pus cells and many Gram-negative diplococci, both intra- and extra-cellular, larger than are usually seen in the cerebro-spinal fluid. The cultures gave a profuse growth of apparently typical meningococci. Naso-pharyngitis followed, but no swabs were taken from the throat. The temperature remained normal. The tarsal conjunctiva was painted with silver nitrate solution, 10 grains to the ounce, and the eye was irrigated with boric lotion every two hours. The question of giving a vaccine as a prophylactic against meningeal infection was discussed, but it was decided that the danger of the infection becoming generalised during a negative phase was too great. Antimeningococcal serum was not available. On the 12th the discharge was still profuse, but the pain had disappeared. On the 13th the left eye became affected and was treated with silver nitrate solution, and the discharge from it also was profuse. The patient complained of a very sore throat. On the 15th she was found to have lost her sense of smell, but the eyes were much better, the left not having reached such a severe stage of inflammation as the right. On the 17th the left eye was quite well and the right almost so. The patient got up on the 18th, and two days later was on duty. Though meningococcal conjunctivitis occurred in several of the cases of generalised infection with the meningococcus in the hospital, in none was it of such a fulminant type as in this case in which no general infection occurred. The meningococcal infection of the joints and the conjunctiva seemed to be of almost explosive rapidity, but recovery in every case was as rapid as the invasion.

THE ANNUAL MEETING OF THE BRITISH DENTAL ASSOCIATION.

As we briefly noted last week, the British Dental Association is providing an attractive programme at its annual meeting, which is to be held in the hall of the Royal Society of Medicine, 1, Wimpole-street, W., on Thursday to Saturday next. The important subject of war injuries and gunshot fractures of the jaws and their treatment forms the chief subject of discussion, at which the coöperation of distinguished surgeons and dentists of our own and allied countries has been invited. The programme is as follows: On Thursday, June 15th, at 2.30 P.M., Early Treatment of Jaw Injuries. On Friday, June 16th, at 10.30 A.M., Appliances and Splints, the discussion to be opened by Mr. M. F. Hopson and Mr. J. E. Spiller; at 2.30 P.M., Restoration of Lost Portions of the Jaw by Surgical Means. On Saturday, June 17th, at 10.30 A.M., Treatment of Ununited Fracture and Mal-union, and Diet, Massage, and Dynamic Exercises, to be introduced by Mr. J. F. Colyer and Captain H. M. Holt, R.A.M.C., respectively. An introductory address will be given by the President (Mr. W. H. Dolamore) on Thursday afternoon. Those expected to participate in the discussions include Sir Frederic Eve, Sir F. M. Farmer, Captain H. D. Gillies, R.A.M.C., Captain Somerville Hastings, R.A.M.C., Mr. Norman G. Bennett, Mr. W. Hern, Mr. G. Northcroft, Mr. J. Lewin Payne, Mr. Percival P. Cole, and Mr. G. G. Campion, besides British, Canadian, French, Italian, and Belgian army dental surgeons. On Friday afternoon, June 16th, at 4.30, Lieutenant Derwent Wood, A.R.A., will demonstrate methods of making and casting masks for facial wounds which he is using at the Wandsworth War Hospital. Other demonstrations will be given by Mr. H. Baldwin and Mr. G. Brunton. An exhibition of appliances, splints, and models, has been arranged, and contributions are expected from war hospitals in this country and in the war zone.

THE INDEX AND TITLE-PAGE TO THE LANCET: JANUARY TO JUNE, 1916.

IN view of the Government restrictions upon the supply of paper, and the shortage of paper quite apart from these restrictions, we cannot include, as usual, in all the copies of THE LANCET the Index and the title-page which are due at the end of this month. The Index and title-page will, of course, be prepared, and copies will be supplied gratis to subscribers on application to the Manager, THE LANCET Office, 423, Strand, London, W.C. Such applications should please be sent in at once.

DONATIONS AND BEQUESTS.—By will the late Miss Annie Emily Pitman left £1000 to the Tunbridge Wells General Hospital.—Sir Edward Nicholl, of Cardiff, has given £10,000 to the King Edward VII. Hospital at Cardiff for the erection of a new wing.

PREVENTION OF FLY-BREEDING IN HORSE-MANURE.

BY S. MONCKTON COPEMAN, M.D. CANTAB., F.R.C.P. LOND., F.R.S.,
LIEUTENANT-COLONEL, R.A.M.C. (T.); FORMERLY DIVISIONAL SANITARY OFFICER, 58TH (LONDON) DIVISION (T.F.).

DURING the summer of last year (1915) much difficulty was experienced in various military camps in regard to the removal of horse-manure at intervals sufficiently frequent to avoid the breeding of flies, the defective accomplishment of which sanitary precaution, apart from possibility of actual danger to health, having given rise to considerable discomfort to the troops. In certain hutted camps, more particularly, this "torment of flies" was aggravated owing to the unfortunate propinquity of horse-lines to kitchens and messes. Farmers were usually willing enough to receive the material, but even when contracts had been entered into between them and the military authorities for its removal it not infrequently came about that, owing to shortage of labour, of horses, and of carts, they found themselves unable to fulfil their contracts, especially during much of the period of greatest fly prevalence, when harvest operations were taxing their resources to their utmost. In some instances, in order to meet this difficulty, incineration of the manure, as advocated in a War Office Memorandum issued in April, 1915, had been attempted; but this method of disposal necessarily involved a waste of useful fertilising material, and indeed for this reason the official instructions as to destruction by burning have since been countermanded. An alternative method, consisting in the stacking of the manure and subsequently spraying or watering with a solution of borax, was also recommended.

Investigations by the United States Department of Agriculture.

The use of borax was the outcome of experimental work, extending over a considerable period of time, reported in the official Bulletins (Nos. 118 and 245) issued by this department. The Commission entrusted with the work, while fully persuaded of the efficacy of this substance, if properly used, admitted that the dosage of borax to the extent of 0·62 lb. per 10 cubic feet of manure, necessary to effect the desired result as regards the destruction of fly larvæ, might render the manure injurious to vegetation. Consequently further investigations were instituted, special attention being directed to the possible utility of organic substances, of which they eventually decided that hellebore, either of the white or green variety, afforded the most promising results. An average of 12 experiments showed a larvicidal action of 95·5 per cent., and the substance, which produced no ill-effects on vegetation, was found to be completely decomposed within 30 days. Unfortunately, however, the cost was found to work out, in America, at double that of borax, while in this country it would probably be considerably higher. It hardly appears probable, therefore, that the use of hellebore will become at all general, especially on the large scale that would be necessitated in connexion with military services, as the expense would constitute even more of an objection than in the case of borax.

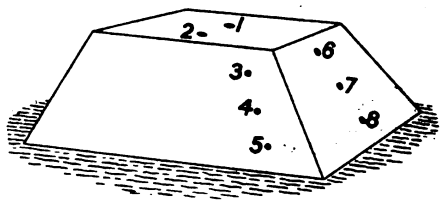
Apart from this aspect of the question, the work, though of much interest, cannot be regarded as altogether satisfactory from the practical point of view, as, indeed, is recognised in the published reports. Thus, reference is made to the "artificial conditions of cage experiments"; and to the difficulty in obtaining small samples of material for examination that could be regarded as representative, especially in view of the fact that no attempt was made to pack the manure. Moreover, the size of the experimental heaps, never apparently exceeding 40 cubic feet (32 bushels), was insufficient to afford reliable evidence as to the effects likely to be produced when dealing with large quantities of manure.

The Method of "Close-Packing."

Under these circumstances it was decided to institute a re-investigation of the question on the larger scale rendered possible by the enormous amount of material available in the area occupied by the 58th (London) Division. Professor Maxwell Lefroy kindly afforded valuable suggestions as to the methods of testing certain substances which, in his opinion, were likely to prove serviceable as larvicides; but further collaboration in the work, which he had kindly promised, was unfortunately prevented by his recall to official duties in India.

The work was commenced early in June, 1915, with two carefully prepared, well-packed heaps of manure, each of a capacity of approximately 500 cubic feet, the area covered by each heap being 10 feet square, and the height being rather more than 5 feet to allow for the slight slope, inwards and upwards, of the sides. One of these heaps was kept as a control, while the other was treated by Professor Lefroy, who was present on this occasion, by pouring one gallon of tetra-chlor-ethane into a slight depression on the upper surface of the heap, with the object of obtaining information as to the effect of this substance on fly larvæ. A number (eight in all) of tiny packets of wire gauze, each containing 12 maggots, were inserted into the heap to a depth of about four inches, at the various points shown in the diagram. (Fig. 1.) To each gauze cage was attached a length of red

FIG. 1.



Heap of manure of approximately 500 cubic feet content, with a base of 10 feet square and a height of a little over 5 feet. The numbers denote the positions of the wire gauze cages each of which contained 12 maggots. (The sloping in of the sides of the heap has been exaggerated in the drawing.)

tape by which its position was indicated when the surface was again smoothed down, and in each cage also were placed a few particles of food material. Twenty-four hours later the gauze cages were removed, when all the contained maggots were found to be dead, shrivelled, and dark grey in colour.

This, of course, at first sight appeared eminently satisfactory, but the result of a similar experiment carried out on the control heap showed the necessity for caution in interpretation. For when the second stack was tested with larvæ in similar fashion, but without having undergone chemical treatment of any kind, again after 24 hours the larvæ were found to be dead at seven out of the eight places at which they were inserted, the exception being at the extreme top of the experimental stack. A third experiment was then put in hand with this stack, and yet, again, after 24 hours *all* the larvæ were dead, including those at the one spot at which this had not previously been the case.

I at once wrote to Professor Lefroy, informing him of what had happened and suggesting that in view of the unexpected results that had been obtained, apparently resulting from the heat generated by the process of fermentation in the newly-made manure heaps, it would be desirable, if suitable thermometers could be obtained, to record the precise temperature developed at various levels in the experimental stacks. A number of further manure heaps were subsequently constructed, and as the result of careful observations it soon became evident that the temperatures developed during fermentation largely depended on the manner in which the manure was stacked during the building of the heap. The manure, of which under service conditions we had an abundant supply, was brought in barrows from the horse-lines and stables and thrown on to an area of concrete or of hard ground, so marked out beforehand that the dimensions of the resulting pile are from 300–500 cubic feet. But there is, of course, no difficulty in extending the pile indefinitely in any lateral direction if necessary. It is well, however, not to exceed a height of 5 feet, as otherwise difficulty would be experienced in the building process. Each load as it is thrown on is firmly pressed down with shovels and slightly sprinkled with water if the weather is dry. The slightly sloping sides are finally beaten and smoothed over with a shovel.

Some of our experimental heaps have been examined daily for over two months, and sections from the top, sides, and base removed from time to time and carefully examined for eggs, larvæ, or pupæ of the house-fly. But, with one exception, none have been found so far, although house-flies at certain periods have been breeding in the manure

elsewhere in swarms. The one exception was in the case of a heap of somewhat smaller size than usual which, on being broken down, was found not to have been properly packed at the point where about a score of larvæ and pupæ were found. That this was likely to be the case had been indicated by the fact that the thermometer had shown persistently lower temperatures at the particular area in question than elsewhere in the heap, or in any of the neighbouring heaps.

When fermentation has ceased the inside of the heaps is found to be, for the most part, of a greyish colour, and more or less powdery in consistence. This material has a slight and not unpleasant odour somewhat similar to that of brewers' yeast.

The Temperature Lethal for Larvæ of the House-fly (Musca Domestica).

In order to arrive at any accurate estimation as to the value of the method of treatment of horse-manure advocated with the object of preventing the breeding of house-flies, it was obviously essential to obtain experimental information as to the minimum temperature, exposure to which for a limited period, is incompatible with continued existence of the larvæ of the fly. As unfortunately no definite information on the subject appeared to be available, Professor F. M. Howlett, entomologist to the Indian Government, who is at present in this country on leave, kindly undertook, at my request, experimental investigation of the subject. As the outcome of his inquiry he informs me that maggots are quickly killed by either dry or wet heat (i.e., submerged in warm water) at any temperature above 46° C. (114 8° F.). He adds: "It is improbable that they could live long at anything over 41° C. (about 106° F.)"

Results of his experiments carried out at different temperatures are as follows:—

Temperature to which exposed (degrees Centigrade).	Period of exposure which proved fatal to fly larvæ (in minutes).	
	Dry.	Wet.
50°	2½	¾
48°–49°	8	2
46°–47°	21	2½
44°–45°	180	7
42°–43°	—	12½

Temperature of air, 16° C. (nearly 61° F.).

With the exception of certain observations by M. Roux, referred to in a later paragraph of this paper, the only previous experimental work as to the temperatures lethal for insects with which I was acquainted is that of Mr. Bacot, and of previous observers quoted by him in his paper on The Temperature Necessary for the Destruction of Lice and their Eggs.[1] While he confirmed certain experiments by Blacklock (1912) which indicated that bugs (*Cimex lectularius*) die at 113° F. (45° C.), he further determined the fact that fleas (*Xenopsylla cheopis*) and cockroaches (*Periplaneta americana*) are also destroyed at this temperature or a few degrees higher. Mr. Bacot refers, moreover, to experimental work performed under the auspices of the Yellow Fever Commission (West Africa) as demonstrating that about the same degree of heat is also critical for mosquitoes (*Stegomyia fasciata*).

Quite recently, in reply to a letter from me informing him of our results, Dr. Gordon Hewitt, Dominion Entomologist for Canada, referred me to certain observations of his in a paper published in 1914,[2] from which the following paragraphs may be quoted:—

The heating of freshly piled manure is a matter of common knowledge and observation, but I have not seen any reference to its relation to the breeding of house-flies beyond the general statement that the higher temperature accelerated the development which my own experiments, carried out some years ago under controlled incubator conditions, demonstrated. Newstead found that at 100° F. the larvæ were uncomfortable and left the manure. In incubator experiments I found that a temperature of 104° F. was too great for the larvæ, and anything above that roasted them alive.

[1] Brit. Med. Jour., Jan. 29th, 1916.

[2] Further Observations on the Breeding Habits and Control of the House-fly, *Musca domestica*, Journal of Economic Entomology, vol. viii., No. 3, 1914.

If we examine the temperature of a pile of manure taken at a time when it is fresh, attractive to flies, and inhabited by larvæ, the results are somewhat surprising and significant. The following are the temperatures which were taken in connexion with two of the experiments:—

Experiment number	11 (1). ...	11 (4). ...	11 (5).
Date	Aug. 8th...	Aug. 9th. ...	Aug. 15th.
Length of time manure exposed	3 days. ...	2 days. ...	2 days.
Atmospheric conditions	Sunny, cool wind. ...	Oppressive, alternately sunny.	Oppressive, sunny ... alternately.
Air temperature	86° F. ...	78° F. ...	103° F.
Temperature on surface of manure...	97° F. ...	87° F. ...	—
Temperature 1 in. below surface	— ...	106° F. ...	—
Temperature 4 in. ,,	156° F. ...	145° F. ...	—
Temperature 6 in. ,,	158° F. ...	— ...	—
Temperature 10 in. ,,	164° F. ...	— ...	160° F.

From the above temperature records it will be seen that at no great depth from the surface of the manure piles the heat was too great to permit the existence of the larvæ, and this fact was supported by observation. On the top of the pile the larvæ were only living in the surface layer, that is, the habitat was *peripheral*, and the excessive heat due to fermentation becomes practically a larvicide.

These observations are of special interest in view of the fact that the work of Dr. Hewitt, as in the case of the United States Commission, was carried out with manure heaps of comparatively small bulk.

Temperature Observations.

Temperatures were taken daily about 12 noon with a long, tubular, widely calibrated, and Kew-certificated thermometer, on all four sides of each manure stack, and, in our later experiments, at three different levels on each side—at the centre, and at about 6 inches from the top and bottom respectively. Observations were also occasionally taken on the upper surface of the heap. As a matter of routine all temperatures were taken on each individual day as nearly simultaneously as possible. In order to ensure that the thermometer should be inserted at the same spot on each occasion, and in order to avoid necessity for using any force in its introduction, pieces of wood of approximately the same diameter as the thermometer, and rather less than a foot in length, were thrust into the sides of the heap, so soon as this was finished, at the various points at which temperature observations were subsequently to be taken. Each day when temperatures were taken these pieces of stick were removed one by one and the thermometer inserted. So soon as the temperature recorded remained steady the thermometer was removed and the piece of stick replaced, thus avoiding any appreciable loss of heat or any evaporation from beneath the surface of the pile. The temperatures recorded are those attained when the bulb of the thermometer was inserted about 4 inches beneath the surface.

FIG 2.

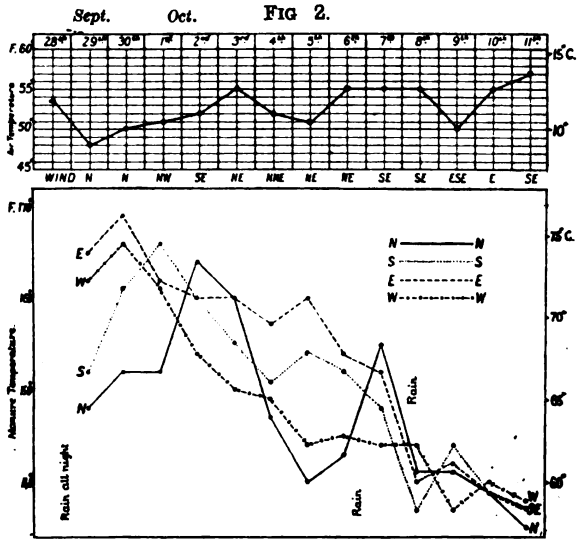


Chart showing (below) the temperature readings, day by day, of the manure-heap taken simultaneously at 12 noon on all four sides (N., S., E., and W.) of the heap. On each side readings at three different levels were taken, but only the lowest are here recorded. The bulb of the thermometer was always placed 4 inches below the surface. Above is shown the temperature of the air during the same period, and between the charts the direction of the wind. This manure-heap was built up on Sept. 28th.

For purposes of charting, the *lowest* temperature of the three taken at the different levels on each side of the heap was that which was recorded. As a general rule these temperatures varied within two or three degrees only on the same side, although occasionally a wider variation was observed. For purposes of comparison, daily record was also made of the temperature of the air, as also of the direction of the prevailing wind. The range of temperature observed in these experiments was considerable, and the upper limits reached were unexpectedly high, even in late autumn (169° F.) when the air temperature seldom reached and practically never exceeded 55° F. (See accompanying chart, Fig. 2.)

A preliminary report on results obtained in the prevention of fly-breeding in manure by means of the method described above was submitted at the Congress of the Royal Sanitary Institute, at Brighton on Sept. 2nd, 1915. Shortly afterwards there appeared in the *British Medical Journal*[3] a brief article entitled "The Natural Enemy of the Fly" dealing with a communication to the "Académie des Sciences" by M. Roux, Director of the Pasteur Institute in Paris (as I have since learnt, on behalf of M. E. Roubaud),[4] in which fermenting horse-dung is referred to in the words with which the abstract is headed. Unfortunately, however, I have had no opportunity of referring to the original paper. Roubaud states that the eggs of the house-fly cannot withstand a temperature of 60° C., whereas fresh horse-dung, if kept well covered up from the cold, quickly ferments, and during fermentation the temperature rises to between 60° and 70° C. Even the higher of these temperatures, however, has been considerably exceeded in several of our experimental heaps. Moreover, as will have been noted previously, Professor Howlett has demonstrated that the larvæ of the house-fly are destroyed at a temperature many degrees lower than that which Roubaud has found to be lethal for the eggs. So that even in the event of eggs being deposited and hatching out, it does not follow that the resulting larvæ will survive.

Dr. W. H. Symonds, medical officer of health of the city of Bath, has investigated[5] the temperature attained in small manure-heaps treated with different chemical substances, and in an untreated control heap. He states that "the temperature never rose above 70° C. (158° F.), while the air temperature varied from 42·8° to 75·3° F." When after an interval of two months the heaps were turned over he "could find no evidence of flies."

Preparation of the Area on which Manure is to be Stored.

If, as is probable, a concrete floor is not available on which to form the manure heap, it is desirable to prepare the surface of the ground after the manner suggested by Professor Lefroy. This is done by mixing one gallon of "oil, mineral-wood-preserving" with 40 gallons of pulverised earth and spreading the mixture on the ground and beating it down. The quantity mentioned is sufficient for 100 square feet of manure surface. It is desirable not only to treat the actual area on which the manure is to be stored, but, in addition, a space of about 3 to 4 feet beyond the site limits in order to prevent the possibility of larvæ (in the event of any being bred in the deposited manure) escaping when about to pupate and burying themselves in the adjoining ground—a migratory habit of the larvæ of *Musca domestica* under normal conditions, the nature of which has been investigated by Gordon Hewitt and other observers.[6]

In the event of the manure having to remain where deposited for any length of time, banking up the sides and covering the top of the heap with similar compost of earth and heavy oil would also be likely to be serviceable, if only in preventing the escape of volatile constituents of the manure, to which its fertilising properties are largely due. As regards the house-fly, a manure-heap appears no longer to possess any attractions when the process of fermentation is at an end.

Effect of Close-packing on Fertilising Power of Manure.

The question naturally arises as to the extent to which the agricultural value of the manure is diminished as the result of the high temperature developed when the heaps are close-packed in the manner advocated for the prevention of fly-breeding. The necessary time and opportunity for satisfactory experimental elucidation of this question have not been available. Thus far, the only test that has been carried out was made in October last with some boxes planted with mustard seed, and kept in a green-house to ensure a satisfactory temperature. Three boxes were employed for this purpose, which were filled respectively: (*a*) with sifted garden soil; (*b*) with sifted garden soil and well-rotted garden manure in equal parts; and (*c*) with sifted garden soil and material from the centre of one of the experimental manure-heaps in equal parts. On Oct. 24th, 1915, each of the three boxes was planted with approximately equal quantities of seed, and kept as regards exposure to light, temperature, watering, &c., under identical circumstances. When examined on Nov. 11th growth had occurred over the entire surface of the soil contained in each of the three boxes, but whereas no appreciable difference could be made out between the extent of growth in (*b*) and (*c*) respectively, in each of these the individual plants were taller, with leaves, stalks, and rootlets about twice as large as those grown in (*a*), the control box.

Although, obviously, no stress can be laid on the results of a single and somewhat primitive test of this kind, the result evidently affords some indication that material from the interior of our experimental manure-heaps possesses much, at any rate, of its original value as a fertilising agent, notwithstanding exposure to the high temperatures generated during fermentation.

[3] Brit. Med. Jour., Sept. 18th, 1915, p. 448.

[4] Comptes Rendus, No. 11, Sept. 13th, 1915. Translation in Journal of Royal Army Medical Corps, No. 1, January, 1916, vol. xxvi., p. 107.

[5] The Medical Officer, Sept. 25th, 1915, p. 138.

[6] R. C. Levy and W. T. Tuck: American Journal of Public Health, vol. iii., No. 7, pp. 657-660, 1913. R. H. Hutchison: Bulletin No. 14, U.S. Department of Agriculture, Washington, 1914. C. G. Hewitt: Canadian Entomologist, vol. xlvii., pp. 73-78, March, 1915.

THE FOOD-SUPPLY OF THE GERMAN PEOPLE.

IN the preface to their little book, the first chapter of which we have already noticed,[1] Dr. Kuczynski and Dr. Zuntz quote a remark of the then Secretary of State, Delbrück: "In these hard times criticism is, to my mind, only justifiable when we can learn from the past what we have done wrong or left undone, and how to put it right in the future." The past has already been dealt with. In the second chapter the authors deal with the future, and their views, based on the prospects of the coming harvest, are summarised below. *It is necessary to remember that the views are those of the authors in all cases, and that repeating them here does not mean confidence in their accuracy.*

The right division of food between man and beast.—It was shown that at the beginning of the summer of 1915 only a partial control of supplies had been reached owing to the fact that during the first five months of war the measures taken in this connexion had been inadequate. Of far greater importance than petty household economies was the reduction in the number of beasts and the consequent saving of foodstuffs suitable for human consumption. The saving thus attained is an actual economy, in that such foodstuffs given to the animal, and eventually coming back to man in the form of meat, milk, and fat, are reduced by the amount required by the animal for the production of energy. If three or four million tons less of cereals had been used as fodder in the first few months of the war Germany would have had, according to these authors, ample for the needs of the population without such measures as the introduction of bread tickets. These facts, they say, must be considered in dealing with the coming harvest, while waste must not be sanctioned in the household, but above all the control of the entire food-supply is paramount, so that sufficient food may be assured to the people even in the case of a poor harvest.

With the limitation in the production of beasts will be associated a corresponding shortage in the supply of animal food which will entail the adoption of a more vegetarian diet, and it should be made common knowledge that such a change in diet will injure neither health nor working capacity if food substances in correct proportion and in digestible form are available. For example, instead of meat proteid milk may take the first place. It is true that the supply of milk also has been curtailed, but the reduction in the number of pigs will liberate a large quantity of skim-milk for human consumption. In the last year of peace the quantities of digestible proteid given to pigs in the form of milk were: In skim-milk, 175,800 tons; in butter-milk, 36,900 tons. By

[1] THE LANCET, Feb. 26th, 1916.

saving about half of this the lack of animal proteid may be kept well within the bounds of health.

The authors find the question a difficult one how far the breeding of the various beasts should be restricted. Pigs consume more of man's food than do other animals. It is only during the latter part of their growth and before fattening that they can be supported on green foods (clover and comfrey) and the products of the forest (nuts, mushrooms, worms, larvæ). For the period of fattening man's food becomes necessary. Just after the harvest, indeed, this food is available. Man can at most consume but one-half of the potato crop. The other half remains for fodder, along with the leavings of the cereal harvest (the damaged corn, and so on), and more important still the waste products of the sugar industry, and finally the household scraps. In estimating what future stores will be available the coming harvest must be considered, and we must reckon on a much lower average productiveness than that of last year, on account of (1) the lack of agricultural labour; (2) the scarcity of artificial manure (the use of which during the last 10 years has raised the productiveness of the land by at least 50 per cent.), particularly of nitrogenous manures which are the most important and of which 750,000 tons are lacking; (3) the reduction of area of land under cultivation to the extent of about a million hectares [2.47 million acres], owing to the lack of labourers and the fact that much of this land has been within the fighting area—e.g., in East Prussia and Alsace. It is possible that on this land summer crops may be raised, but the yield from them is never so great as from the winter crops. Thus for the second autumn of the war a considerable curtailment of supplies must be expected. The authors are, however, reassured by the remembrance that about three million tons of corn were used as fodder, 90,000 tons for distilleries, and 30,000 tons in starch factories, and that these amounts can be saved almost entirely for the food-supply.

In spite of the favourable outlook the authors recommend that the ration of bread should not be increased above about one-third, particularly in view of the liberal supply in autumn of fruit, vegetables, and potatoes. It is better, they think, to be in a position six months later to allow a more liberal ration, and for this reason the mixing of potato meal with the flour should be continued, with the precaution of using fresh potatoes from September to October onwards, so that the reserves of dried potatoes may be saved for the second half of the harvest year. This is an especially useful regulation in that fresh potatoes steadily lose in nutritive value through fouling, and also through the process of reproduction, while with the dried potato this is not the case. On this account it is also imperative that the potato-drying factories should be enlarged, and that sufficient supplies of potatoes shall be available for drying. In view of the comparatively perishable nature of potatoes a stocktaking must be made at the end of October at latest to ascertain what quantities are available for fodder, so that the whole quantity that can be spared should be used for fodder during the winter months to obtain the nourishment therefrom in meat and fat. It will then be found that in making accessible the sources of fodder-supply hitherto neglected the number of pigs can be materially increased. Since the beginning of the war it has been pointed out that the woods afford a supply of fodder for the rearing and fattening of a host of pigs. Records show that in the sixteenth century on 25,000 acres of oak-forest 9039 pigs were fattened—i.e., one pig on about two acres. But it is only in September and October and November, when the nuts fall, that the woods are so fruitful in fodder. The nuts, rich in proteid, serve for the initial stages of fattening, and as the full-grown animal requires little proteid the process can be completed by a diet of potatoes. In some cases it is advantageous for the women and children to gather the nuts, berries, and mushrooms for human consumption, especially the beech-nuts, from which much oil can be expressed in order to assist in meeting the shortage of fat, while the rest serves as a fodder rich in proteid. In one or other of these two ways, according to the labour available, the products of the forests should be turned to good account. Dried potatoes form a very useful fodder for horses. They are as well adapted for transport as corn, and combined with hay and straw will supply the needs of a horse engaged in hard work. Horses should be fed on fresh potatoes, hay, straw, molasses, and turnip scraps during the winter in cases where the work is only moderate, the corn being reserved for severe work and the dried potatoes for the latter part of the harvest year.

During the war the importance of sugar as a foodstuff has increased, but the authors consider that its production is likely to be curtailed in the next year by the shortage of labour and of manure. Indeed, 30 per cent. less land is under cultivation with sugar-beet this year than a year ago. If the yield is an average one the supply will not materially exceed the needs of the German people, and if it is a poor one it may even be inadequate. Thus, even if the frontiers are re-opened by the return of peace there will not be much sugar available for export, and on no account must as much sugar be used for fodder as during last year. The Government must step in to secure the population a sufficiency of sugar. It is no great matter that the increased cost of production and the curtailment of supplies should have somewhat raised the price, for sugar is still one of the cheapest foodstuffs in Germany. Until next harvest, however, no more sugar must be given to beasts, and molasses, too, must be used less for this purpose. The cattle will not suffer while green foods are again available.

It has been seen that the difficulties of regulating a food-supply which remains in the hands of the producers are very great, and to obviate these the law must be supported by a tariff of prices. To hinder the use of man's food as fodder the authors foresee that it will be necessary to fix a maximum price for meat, a price so adjusted to the maximum price of corn, flour, and potatoes that it pays the producer at least as well to sell these foods to customers as to use them as fodder. To prevent the immoderate use of barley, oats, and potatoes for pigs the following considerations must be borne in mind. For a pig to gain 100 kg. in weight enough fodder is required to supply 315 kg. of starch and 30 kg. of proteid—i.e., 440 kg. of barley, or 520 kg. of oats, or 1500 kg. of potatoes with 350 kg. skim milk. At M.200 a ton sufficient barley will cost M.88. Allow a quarter of this price for loss, then the attainment in a single pig of a gain in weight of 100 kg. will cost M.110. In checking the rise of meat prices the risk of serious hardship to the farmer must be avoided. It is necessary for him to obtain a higher price for his products as a whole, and particularly for grain and potatoes, than in time of peace, for only then is he in a position to carry out the proper regulations for the control of the cereal and fodder harvest. To assure to the population a sufficiently varied diet it is of great importance that large quantities of fruit and vegetables should be produced and preserved. For the latter sugar is required, and it is therefore imperative that the present shortage of sugar should be overcome, the deficiency being due not to lack of raw material, but partly to the increased difficulties in refining and partly to speculation. The safest method again is the fixing of a maximum price, which will effectually prevent speculation. Large production of jam and preserved fruits is essential, since the supply of fat is likely to steadily diminish.

In connexion with the restricted milk-supply, the appropriation of skim-milk to human consumption is, according to the authors, a desirable measure. The price of skim-milk must be raised so that milk vendors are not obliged to sell all their skim-milk to the farmers, and so to encourage its use in the towns. If this is done and the demand for skim-milk in the towns increases the farmers will suffer. At present the demand does in fact exceed the supply. In remote districts the skim-milk is not sent to the towns for sale, but is made into curd-cheese and the whey is used as fodder. As the farmer cannot estimate from day to day what supplies of skim-milk will be required, much might be wasted by a sudden drop in the demand. The sale of skim-milk therefore must be fixed by contracts extending over periods of months at least, and under the control of the German Agricultural Society. The perishable nature of skim-milk is not greater than that of full milk; it is indeed rather less, and its durability, though largely dependent on cleanliness, may be increased by heating to about 80° C. The skim-milk remaining over can be made into skim-cheese or condensed, and in the latter form is particularly useful in bakeries and in the household for the making of puddings.

The finding of new fodder.—The authors open their discussion of this important topic by saying:—We have seen that large supplies which were formerly used as fodder have now

been reserved for the food-supply of the people, and the deficiency in fodder thus caused must be made up (1) by more careful use of the available fodder; (2) by the use of other material hitherto neglected. It has been shown how the forests of leafy trees may supply nutriment for pigs and similarly they form a source of supply for cows. Efforts have already been made in times of scanty harvest to use this source of supply, but to no great extent. The comparative nutritive value of the various leaves is shown in the following table, giving the amount of proteid and starch obtained from 100 kg. of each raw material:—

Species of fodder.	Digestive proteid.	Starch.
Elm leaves (young)	11·7 kg.	50·0 kg.
,, ,, (old)	9·7 ,,	38·8 ,,
Acacia leaves	23·6 ,,	54·0 ,,
Horse-chestnut leaves	11·3 ,,	41·7 ,,
Poplar leaves in October	6·0 ,,	26·7 ,,
Copper beech leaves in August	0·9 ,,	16·7 ,,
Vine leaves in autumn	6·7 ,,	42·5 ,,
Acacia brushwood in winter	5·5 ,,	12·6 ,,
Good meadow hay	5·5 ,,	31·8 ,,
Oat straw	1·3 ,,	17·4 ,,

In order to make the best possible use of leaves it must be borne in mind that during the day the action of light draws considerable quantities of starch and sugar into the leaves, some of which returns during the night into the woody parts, so that the leaves are of the most nutritive value towards evening, when they should be gathered. Towards autumn the leaves grow less nutritious as well as less digestible, but, on the other hand, they contain less water and are more easily dried. They remain nevertheless useful as fodder until the end of November, as the analyses of Rissmüller have shown. Some leaves, such as oak, alder, &c., can only be used sparingly as fodder owing to their large tannin content. Those most suitable are: elm, acacia, horse-chestnut, poplar, ash, lime, maple, guelder rose, birch, fruit-tree leaves, and vine leaves. In drying, the leaves should be protected from rain and from direct sunshine, most easily done by drying them in the shade of the trees from which they were gathered. This use of leaves especially meets the case of the poorer people in town and country who keep one cow or a few goats. No harm results to the trees and bushes even if a second crop is gathered from them during the summer; the gardener himself normally removes many of the small leaves of the vine. Reckoning only with the use of the more accessible trees and bushes in hedgerow and by the wayside, the increase in fodder supply would amount to many tons.

Haberlandt is quoted by the authors as having revealed another source of supply in the woods—viz., the sap-wood of trees in early spring, with its high content of starch and fat. A complete method is still wanting for separating the nutriment from the cells in which it is contained, but short of this mechanical pulverising and chemical methods of separation have been efficacious in rendering these sources of nutriment available as fodder. To obtain nutritive material from straw and wood certain methods are available. The best-known method is that of the conversion of cellulose into sugar by boiling with acid under pressure, but this has the disadvantage of the presence of large quantities of harmful salts after neutralising the mineral acid. A more recent method is the use of organic acids which are in themselves of value as fodder—e.g., lactic acid. The significance of this method lies in the fact that not only is much cellulose converted into digestible carbohydrate, but the remaining nutriment in the cellulose coverings is exposed at the same time to the action of the digestive juices of the animal. Lehmann (Göttingen) had years ago made straw more nutritious because more digestible by heating it with a percentage of caustic soda under pressure. This method also results in the presence of organic acids which ruminants can digest. Kellner's method also, that of freeing the nutriment from its coverings by chemicals, resulted in a raising of the nuritive value of straw by 50 per cent. The straw thus treated was made appetising by the addition of molasses. Lastly there is the mechanical process of pulverising the fodder rich in cellulose. This method has two purposes—(1) to spare the animal much chewing and digesting; (2) by tearing the cellulose membranes to render them accessible to the digestive juices of the animal. Although of great use for the feeding of horses and pigs, Friedenthal showed that it needs complete pulverisation to open the cells, thus entailing great outlay of mechanical power and therewith great expense. The authors consider, therefore, that it is only practicable in the case of substances especially rich in nutriment, such as hay made from young green plants and the sap-wood of trees.

In the search for new fodders, heather, which covers large tracts of ground in north Germany, must not be overlooked, and as it contains very little water it is easy to dry. From ponds and water-courses water-weeds may be gathered and dried, and these form a very nutritious hay. Dwellers on the sea coast can increase their fodder-supply by collecting and drying seaweeds, avoiding those containing iodine which is poisonous. The most pressing question is to obtain a sufficiency of proteid for the milk-yielding animals. Formerly the deficiency was met by using the residue of the oil-industry, but that is now lacking. It must be replaced by the more careful production and use of fodder crops, such as vetches, lupins, serradella, and lucerne. This fodder must no longer be given to the working animals, but to those yielding milk and to the young growing cattle. The plants usually ploughed in as vegetable manure must in part be used to meet the deficiency. If these measures should not suffice use might be made of the method worked out by the Institute of Fermentation Industry for the extensive production of a yeast which is rich in proteid. A quick-growing yeast is cultivated in a sugar solution containing ammonia salts through which air is passed. As this method means a sacrifice of the sugar so necessary for man and beast the authors consider it as a last resort when lack of proteid is really hindering the full use of the available fodder.

Another means which the authors suggest of increasing the fodder supply is the avoidance of loss in the bringing in of the harvest and its storing. Of the highest importance in storing foodstuffs is the question of drying. The drying of turnip scraps and turnip leaves, of the leavings of the malt in beer-brewing, of the distiller's and other waste products from various industries has long been practised to a large extent, sometimes by means of gas, sometimes by steam-heating. There are, however, cheaper methods, such as the new patents by which the exhaust-steam from machinery in electric works and sugar factories can be turned to account. By this method of drying, potatoes can be kept from fouling, and turnip leaves, potato-tops, &c., converted into useful fodder. It is of great importance that the drying should be undertaken early after the next harvest, for if the season happens to be a wet one corn can be prevented from sprouting and the quality of the straw improved, while the hay crop can be increased by 20 per cent. or 30 per cent., by increased facilities for drying. The following table shows the percentage loss in nutrient material by the tardy drying of hay:—

Time taken for drying.	Proteid.	Fat.	Nitrogen-free extractives.	Fibre.	Mineral salts.
10 days	9·9	49·5	16·3	2·5	12·8
20 ,,	45·8	72·9	46·6	27·7	48·6

In saving the hay from damage by rain the outlay in heating material (a few pence for 100 kg.) is more than compensated by the improved quality of the hay. In drying great quantities of hay and corn in bad weather large roofed-in spaces are best, and if space is precious the corn can be cut half-way down the stalk. By Loebel's method of drying at a comparatively low temperature the rendering of the straw indigestible is avoided. Hay that is dried in the open fields should not be left lying on the ground but raised on trestles, stretched wires, &c., so that it is better exposed to the sun, and drains free of water in case of rain.

The drying process is, in the authors' opinion, not only useful for fodder but also for foodstuffs, and should be adopted both in country and in town. In the household it can be done on the hearth, in the oven, or in the open air. Not only the usual fruits such as plums, apples, cherries, bilberries, &c., should be preserved by this means, but also potatoes, either raw in slices, or boiled in their skins and then mashed up. Further, in that drying factories cannot be built fast enough, pickling methods must be improved by the employment of the culture of bacilli. Even in the case of withered turnip-tops the Institute of Fermentation Industries at Berlin found that by placing them in large quantities in cemented pits and treating them with a culture of lactic acid loss by fermentation was considerably reduced.

(To be concluded.)

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Trench-foot.

Dr. Raymond and Dr. Parisot have presented to the Academy of Sciences (introduced by Dr. Laveran) a note on cold-bite of the feet. The authors conclude that the troubles observed in this affection are characteristic of a peripheral neuritis. Among the various etiological causes suggested they regard cold damp alone as the important factor, and have asked themselves by what mechanism this cosmic agent acts on the tissues. Thus they have been led to the conception of a local infection of the feet and to a search for the agent. A mould was isolated from the lesions and identified by Professor Vuillemin. Inoculation of pure cultures of this fungus into animals reproduces the typical lesions observed in man—œdema, phlyctenules, black eschars. The authors conclude that the affection is nothing else than a mycetoma of the feet comparable to Madura foot, and they propose to call it *pied de tranchée*. The fungus, which is commonly found in infected soil, straw, and manure, is brought into contact with the feet by the mud of the trench, and penetrates into the tissues by the matrices of the nails or through the excoriations so frequently present at points of friction. Almost all the men after a period in the trenches are carriers of these organisms. The local lowering of temperature resulting from standing in the water permits the implantation of the fungus, which shows its optimum development between 25° and 30° C. From these researches prophylaxis and therapy follow, based on the cleansing and disinfection of the feet by means of soaps and of alkaline, or preferably borated and camphorated, washes. The effects have been excellent: œdema disappears in four days and the neuralgic pain in 15 to 20 days.

The Value of Ambrine in the Treatment of Wounds.

Attention is being drawn to the remarkable success of the ambrine wax treatment now being used at the Hôpital St. Nicolas at Issy-les-Moulineaux for burns, frozen feet, and all wounds where the tissues have been so damaged as to exact great length of time and considerable disfigurement in their restitution by the usual means. The Minister of War, in reply to the question of the deputy M. Mons as to why, in view of the marvellous results obtained by treating burns and frost bites with paraffin wax at the Hôpital St. Nicolas, all the soldiers suffering from such wounds were not sent there, stated that this was being done as far as possible. By the kind permission of Dr. Burlureaux, the Médecin-Chef, Dr. Lancien, and Dr. Barthe de Sandfort, the discoverer of the treatment, I was allowed to visit the hospital on two different occasions and to see the application and its results. Faces badly burned with liquid tar and several cases of very badly affected frozen feet were being treated. The gangrenous toes had been removed and new skin was forming over the raw tissue. The treatment is simple and the method the same in every case. The liquid ambrine, a composition of paraffin and resin, heated to a temperature of 80° to 100° C., is applied in a thin layer with a sterilised paint-brush after the wound has been thoroughly syringed with plain boiled water. No antiseptic is used in ordinary cases. If there is much putrefaction dilute peroxide is used, but as soon as no odour is noticeable this is discontinued, one of the principles of the ambrine treatment being that antiseptics retard the formation of new tissues. The hot liquid congeals as soon as applied, forming a compress on the wound which retains its heat for a considerable time. A thin layer of absorbent cotton is added and also covered with a layer of liquid wax. The wound being now perfectly protected from infection from without the composition of the exterior dressing is immaterial and the amount used may be quite limited—a fact of importance in field hospitals where great numbers have to be dealt with and stores are scanty. The patients assured me they felt an extraordinary relief from pain as soon as the wax was applied. One man was admitted in great agony suffering from a face terribly burned from jets of burning liquid tar, and in half an hour was able to eat a meal in comfort. The dressing is renewed every 24 hours for the first few days, and then is only changed every second day. The removal shows another advantage of Dr. Barthe de Sandfort's treatment. The wax peels off like a glove, neither sticking to the tissues nor producing capillary bleeding. The patient does not feel the slightest pain at any time during the dressing, and as there is absolutely no disturbance of the wound the growth of new tissues is not retarded. The advantages of ambrine over other dressings may be briefly summarised thus: (1) Saving in time and money, as the impervious wax coating makes it unnecessary to have specially prepared antiseptic dressings; (2) facility with which the dressing may be peeled off; (3) time required for healing is much shortened; (4) antiseptic lotions need not be used; (5) immediate relief of pain; (6) protection to the wounds from variation in temperature and mechanical injury during transport; (7) avoidance of cicatricial tissue, the skin formed more closely resembling the normal than in treatment by other means.

A Serum against Typhus.

Dr. Charles Nicolle and Dr. Blaizot have undertaken some interesting experiments at the hospital of Sidi Abdallah, near Bizerte, on the action of an anti-typhus serum which they have prepared. This serum has shown a definite protective action in the guinea-pig, which after injection has constantly proved refractory to the strongest inoculations of virus. The monkey and the guinea-pig, after simultaneous intraperitoneal injections of virus and serum, remained immune, whilst control animals rapidly succumbed to the disease. Curative action is exercised only when the serum is employed on the day of inoculation of virus or the two following days. The serum having been shown to be innocuous, Dr. Nicolle and Dr. Blaizot have applied it in 19 cases of typhus in native soldiers or Serbs. In all cases where the injection was given at the onset immediate remission of the symptoms was obtained, defervescence occurring in the following 24 or 48 hours, and the improvement progressing to recovery. Each injection is constantly followed by a fall in temperature. Fourteen patients who were treated from the first appearance of symptoms recovered, whilst all the patients admitted with the disease fully developed died. Before the employment of serum at the hospital case mortality of the typhus patients was very high. The serum is obtained in the following manner. As the microbe of typhus is not visible the virus is cultivated by successive inoculations into the guinea-pig, an animal very susceptible to the infection and in which the virulence of the infection persists undiminished throughout the series. The authors prepare an emulsion of the spleen and suprarenals of the animals thus infected, and this emulsion is then inoculated into a horse or donkey. The donkey which has furnished the serum employed in these researches has received in 11 months 105 virulent inoculations, and was bled after the thirtieth, the sixtieth, and the eightieth of these. The serum has given rise to no toxic or other untoward effect in man. The most favourable dose seems to be 10 c.c. a day.

Diagnosis of Typhus: the Sign of the Tongue.

A medical man with a large experience of typhus through long observations in Morocco, Dr. Remlinger, has described what he terms the "sign of the tongue." This he has observed especially at Tangier, and it is essentially as follows. When a patient with typhoid or paratyphoid is asked to show his tongue he obeys without difficulty, and the tongue can be drawn forward for adequate inspection. But the same request addressed to a typhus patient has a different result. He cannot do so, or only partially and after great effort. The movements of the tongue are not well under his control. The greatest difficulty is experienced in protruding it, and to do so beyond the dental arches is a matter of impossibility. Often even the tongue is retained within the roof of the mouth, and appears drawn towards the pharynx. Contracture of the genio-glossus is suggested. Sometimes a slight trismus is produced at the same time, provoked by contracture of the masseters, which tends to increase the difficulty in protruding the tongue beyond the dental arches, as these are less widely opened. Special difficulty in speaking, nearly comparable in intensity to that present in tetanus, arises from the conditions described. The sign is of service in the differential diagnosis of typhus from typhoid and paratyphoid.

Prophylaxis and Treatment of Cholera.

Before the Medical Society of the Hospitals M. Cawadias endeavoured to draw lessons from the cholera epidemic in the Greek army during the last Balkan War. He showed in the first place the importance in this epidemic of contagion from man to man. In prophylaxis anticholera vaccination has given remarkable results. In his hospital at Strumnitza the author found among his patients that 82·5 per cent. had not been vaccinated at all, 10·6 per cent. incompletely (a single injection of the vaccine of Kolle), and only 6·7 per cent. completely. The mortality at Strumnitza was 21 per cent. for the non-vaccinated and 2 per cent. for the vaccinated. The treatment found the most efficacious was intravenous injection of physiologic serum. Although very effective, vaccination gives results in cholera less complete than in typhoid. Thus it is still needful to insist on the usual preventive measures of disinfection and isolation.

June 3rd.

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

THE following appointments have been notified:—Fleet-Surgeon: J. P. H. Greenhalgh to *Victory*. Staff-Surgeons: T. W. Jeffery to *Pyramus*; E. R. Townsend to *Vulcan*; and P. T. Nicholls and R. Thompson to *Victory*. Temporary Surgeons: F. L. Cassidi to *Leander*; G. W. Carte to *Vivid*; E. R. Bailey to *Vengeance*; H. Danvers to *Attentive*; E. L. Sturdee to *Lion*; H. S. Ollerhead and W. F. R. Castle to Haslar Hospital; P. C. Gibson to Plymouth Hospital; and G. S. Mitchell to Chatham Hospital.

ROYAL NAVAL VOLUNTEER RESERVE.

M. F. Hopson to be Dental Surgeon for temporary service.

ARMY MEDICAL SERVICE.

To be temporary Colonels whilst Assistant Directors of Medical Services: Brevet-Colonel F. Smith, C.M.G., D.S.O., Lieutenant-Colonel J. Poe, D.S.O., Lieutenant-Colonel A. W. N. Bowen, and Lieutenant-Colonel R. J. Blackham, C.I.E.

ROYAL ARMY MEDICAL CORPS.

Temporary Lieutenant-Colonel R. T. Leiper relinquishes his commission.

Temporary Captain H. W. M. Tims to be temporary Major.

The undermentioned to be temporary Captains: Temporary Lieutenant F. W. Milne, Captain G. H. Clark (Unattached List, T.F.), J. A. Turner, C.I.E., Temporary Lieutenant A. D. Forbes, and Temporary Lieutenant A. W. Owen.

Temporary Captain R. B. Llewellyn relinquishes his commission.

The undermentioned temporary Lieutenants relinquish their commissions: E. Robertson, W. F. S. Yeates, H. W. Ward, A. H. Melville, W. C. Marsden, C. G. McAdam, H. A. C. Wall, R. W. Richards, R. B. Minnett, and R. P. Thomson.

The undermentioned temporary Honorary Lieutenants to be temporary Lieutenants: J. G. Jones, V. C. James, N. M. Cummins, L. G. Jacob, R. H. Fleming, R. G. Michelmore, T. T. B. Watson, and W. D. Newcomb.

The undermentioned to be temporary Lieutenants: S. H. Calneck, A. T. Thurston, J. J. Shannon, A. P. MacMahon, A. Morton, T. S. Paterson, W. J. Poole, W. M. Stewart, J. L. Torley, R. Lindsay, J. W. Macfarlane, D. McLaren, F. R. Martin, W. W. Morrison, D. H. Coats, W. K. Connell, A. S. Cook, W. D. Allan, T. H. V. King, P. G. Foulkes, S. G. Harrison, N. H. Smith, H. H. Lawrence, J. A. Tobin, R. G. Gillies, R. H. C. O. Wisdom, A. A. Greenwood, G. Fehrson, W. B. Knobel, P. S. Marshall, G. T. Garraway, J. P. Pegum, W. J. Moir, and A. N. Haworth.

The undermentioned to be temporary Honorary Lieutenants: R. H. Maingot and H. G. E. Williams.

Temporary Lieutenant Michael Sorokiewich relinquishes his commission.

Canadian Army Medical Corps: The undermentioned to be temporary Captains: Lieutenant C. E. Hanna, G. F. Seaborn, H. G. Gillissie (from 62nd Canadian Infantry Battalion), and V. Bourgeault. The undermentioned Lieutenants to be temporary Lieutenants: J. W. Evans, M. A. MacKinnon, and R. Stipe.

SPECIAL RESERVE OF OFFICERS.

Royal Army Medical Corps.

Lieutenant (on probation) G. Irving is confirmed in his rank.

TERRITORIAL FORCE.

Royal Army Medical Corps.

South Midland Mounted Brigade Field Ambulance: Captain A. Leggat to be temporary Major whilst commanding a Field Ambulance.

East Anglian Field Ambulance: Lieutenants E. J. Staddon and R. J. R. Mecredy to be Captains. N. R. Williamson to be Lieutenant.

Highland Field Ambulance: Majors D. Rorie and A. E. Kidd to be temporary Lieutenant-Colonels whilst in command of a Field Ambulance.

East Lancs Field Ambulance: Captain F. C. Bentz relinquishes his commission on account of ill-health. Lieutenant C. W. Fort to be Captain.

London Casualty Clearing Station: J. C. Newman to be Lieutenant.

Wessex Division Sanitary Section: Lieutenant W. H. Biggs to be Captain.

Home Counties Field Ambulance: Captain G. W. C. Hollist, from a Casualty Clearing Station, to be Captain.

West Riding Field Ambulance: Lieutenant H. A. Beetham to be Captain.

West Lancs Field Ambulance: Lieutenant A. S. Parkinson, from a Lancs Field Ambulance, to be Lieutenant.

London Field Ambulance: Captain G. H. L. Whale, from a General Hospital, to be Captain

Welsh Field Ambulance: Major A. R. Wilson, from Attached to Units other than Medical Units, to be Major. Major A. R. Wilson to be Lieutenant-Colonel.

Northern General Hospital: The undermentioned Lieutenants to be Captains: F. Harvey and N. J. Wigran.

London Sanitary Company: Lieutenants H. J. L. Barefoot and B. R. Hebblethwaite to be Captains.

Attached to Units other than Medical Units.—Major J. Griffiths relinquishes his commission on account of ill-health.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

IN the 96 English and Welsh towns with populations exceeding 50,000 persons at the last Census, 8316 births and 4163 deaths were registered during the week ended Saturday, June 3rd. The annual rate of mortality in these towns, which had declined from 17·0 to 12·5 per 1000 in the five preceding weeks, was again 12·5 per 1000 in the week under notice. During the first nine weeks of the current quarter the mean annual death-rate in these towns averaged 15·2, against 14·8 per 1000 in London. Among the several towns the death-rate during the week ranged from 3·6 in Smethwick, 5·1 in Enfield, 5·4 in Edmonton, 5·7 in Hornsey, and 6·8 in Southend-on-Sea, to 19·5 in Rotherham, 19·6 in Great Yarmouth, 21·0 in Middlesbrough, 22·0 in Halifax, and 23·3 in Bootle.

The 4163 deaths from all causes were 1 below the number in the previous week, and included 335 which were referred to the principal epidemic diseases, against numbers declining from 431 to 326 in the five preceding weeks. Of these 335 deaths, 125 resulted from whooping-cough, 104 from measles, 58 from infantile diarrhœal diseases, 32 from diphtheria, and 8 each from scarlet fever and enteric fever, but not one from small-pox. The annual death-rate from these diseases was equal to 1·0 per 1000, and coincided with that recorded in the previous week. The deaths attributed to whooping-cough, which had been 125, 128, and 131 in the three preceding weeks, fell to 125, and included 33 in London, 13 in Manchester, 11 in Birmingham, 8 in Liverpool, and 6 in Newcastle-on-Tyne. The deaths referred to measles, which had been 124, 103, and 85 in the three preceding weeks, rose to 104, of which 26 were registered in London, 10 each in Liverpool, Manchester, and Sheffield, 5 each in West Ham and Stoke-on-Trent, and 4 each in Leeds, Gateshead, and Newcastle-on-Tyne. The fatal cases of diarrhœa and enteritis (among infants under 2 years), which had been 48, 62, and 55 in the three preceding weeks, rose to 58 and included 16 in London, 8 in Birmingham, and 4 in Leeds. The deaths attributed to diphtheria, which had declined from 65 to 34 in the seven preceding weeks, further fell to 32, of which 7 were recorded in London and 4 in Liverpool. The deaths referred to scarlet fever, which had been 18, 15, and 16 in the three preceding weeks, fell to 8, and included 2 in London. The 8 fatal cases of enteric fever included 2 in London, and were one in excess of the average in the earlier weeks of the quarter.

The number of scarlet fever patients under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, which had steadily declined from 1778 to 1398 in the eight preceding weeks, further fell to 1343 on Saturday last; 163 new cases were admitted during the week, against 167, 139, and 161 in the three preceding weeks. These

hospitals also contained on Saturday last 1251 cases of diphtheria, 205 each of measles and whooping-cough, and 32 of enteric fever, but not one of small-pox. The 920 deaths from all causes in London were 46 fewer than in the previous week, and corresponded to an annual death-rate of 11·1 per 1000. The deaths referred to diseases of the respiratory system, which had declined from 405 to 128 in the 11 preceding weeks, further fell to 117 in the week under notice.

Of the 4163 deaths from all causes in the 96 towns, 159 resulted from violence, 288 were the subject of coroners' inquests, and 1235 occurred in public institutions. The causes of 29, or 0·7 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest. All the causes of death were duly certified in London and in its 14 suburban districts, in Manchester, Sheffield, Leeds, Bristol, Bradford, and in 59 other smaller towns. Of the 29 uncertified causes, 4 each were registered in Birmingham and Liverpool, 3 in Gateshead, and 2 each in Southend-on-Sea, Preston, Rotherham, and South Shields.

HEALTH OF SCOTCH TOWNS.

In the 16 largest Scotch towns with an aggregate population estimated at 2,372,000 persons at the middle of this year, 1143 births and 668 deaths were registered during the week ended Saturday, June 3rd. The annual rate of mortality in these towns, which had been 14·8, 15·0, and 14·4 per 1000 in the three preceding weeks, rose to 14·7 per 1000 in the week under notice. During the first nine weeks of the current quarter the mean annual death-rate in these towns averaged 16·4, against a corresponding rate of 15·2 per 1000 in the large English towns. Among the several towns the death-rate during the week ranged from 5·7 in Clydebank, 6·4 in Kirkcaldy, and 7·8 in Ayr, to 16·2 in Dundee, 17·4 in Greenock, and 20·0 in Hamilton.

The 668 deaths from all causes were 15 in excess of the number in the previous week, and included 54 which were referred to the principal epidemic diseases, against 53 and 66 in the two preceding weeks. Of these 54 deaths, 26 resulted from measles, 10 from whooping-cough, 7 from infantile diarrhœal diseases, 5 each from scarlet fever and diphtheria, and 1 from enteric fever, but not one from small-pox. The annual death-rate from these diseases was equal to 1·2, against 1·0 per 1000 in the large English towns. The deaths attributed to measles, which had been 32, 25, and 34 in the three preceding weeks, fell to 26, and included 20 in Glasgow, and 2 each in Aberdeen and Leith. The deaths referred to whooping-cough, which had been 11, 17, and 9 in the three preceding weeks, numbered 10 of which 6 occurred in Glasgow. The fatal cases of diarrhœa and enteritis (among infants under 2 years), which had been 4, 4, and 10 in the three preceding weeks, fell to 7, and included 3 in Glasgow and 2 in Leith. The 5 deaths attributed to scarlet fever were 2 below the average in the earlier weeks of the quarter, and comprised 3 in Glasgow and 2 in Paisley. The deaths referred to diphtheria, which had been 5, 3, and 10 in the three preceding weeks, fell to 5, and included 4 in Glasgow and 1 in Dundee. The fatal case of enteric fever was registered in Glasgow.

The deaths referred to diseases of the respiratory system, which had been 103, 106, and 101 in the three preceding weeks, fell to 83 in the week under notice, and were 62 below the number registered in the corresponding week of last year. The deaths from violence numbered 34, against 19 and 18 in the two preceding weeks.

HEALTH OF IRISH TOWNS.

In the registration area of Dublin 228 births and 151 deaths were registered during the week ended Saturday, June 3rd. The deaths corresponded to an annual death-rate of 19·3 per 1000, or excluding 10 deaths resulting from the recent disturbances to 18·0, against 11·1 in London and 15·5 in Glasgow.

Of the 151 deaths of all ages, 14 related to infants under 1 year and 33 to persons aged 65 years and upwards. The deaths referred to the principal epidemic diseases numbered 7, and comprised 3 from infantile diarrhœa and 2 each from measles and whooping-cough.

The causes of 11 deaths were uncertified, 4 others were the subject of coroners' inquests, and 65 occurred in public institutions.

During the same period 237 births and 124 deaths were registered in the city of Belfast. The deaths were equal to an annual rate of 16·0, against 16·6 per 1000 in the previous week, and included 11 of infants under 1 year and 27 of persons aged 65 years and upwards. The deaths from the principal epidemic diseases numbered 13, against 8 in the previous week, and comprised 6 from whooping-cough, 4 from measles, 2 from scarlet fever, and 1 from diphtheria.

The causes of 3 deaths were uncertified, 3 others were the subject of coroners' inquests, and 37 occurred in public institutions.

Correspondence.

"Audi alteram partem."

A SUGGESTED CLASSIFICATION OF PULMONARY TUBERCULOSIS.

To the Editor of THE LANCET.

SIR,—While the present time is not opportune for a full discussion of this important subject, a short criticism of the proposal of Dr. R. C. Wingfield, which appeared in your issue of May 20th, may be offered. The Turban-Gerhardt notation, so far as it goes, answers to one's experience, though it requires emendation; and in course of time, when agreement can be reached in an endeavour to express the more important factors which portray the acuteness of the disease and the amount of systemic disturbance, a satisfactory classification will be evolved. To ignore the Turban-Gerhardt classification because "it is not sufficiently definite" and to employ one which takes no account of the extent of the pathological process surely does not make for advance in scientific accuracy. The former includes in its "stages" a reference to certain physical signs which connote a pathological process, and it has not simply an anatomical basis. Inman's suggested "stages" may deserve the epithet "simple" applied to them by Dr. Wingfield, but have no claim to rank as a scientific classification, for they merely point to the degree of activity of the disease and give but a very poor indication of the extent of the ravages caused by the tubercle bacillus. The suggestion to add a letter A or D—indicative of the results of treatment—to the symbol of Inman's "stages" does not improve matters, because it does not give the assistance in classifying cases when they first come under treatment, which we should demand from our ideal classification. So far from Dr. Wingfield's notation being founded on "easily obtainable facts," his statement that "a case put under the heading In_3D can only be one in which symptoms due to the large extent of his lesion cause unfitness to work," shows that it depends on a very broad inference, and an inference which takes no account of the many pitfalls which lie in the pathway of the tuberculous patient. A classification which leaves one to assume the extent of the pulmonary lesion is sadly wanting in completeness. Pending the publication of a scheme which will secure universal acceptance, I have personally adopted in the tuberculosis service of the West Riding of Yorkshire the headings of the Turban-Gerhardt notation, with a letter A, B, or C affixed to indicate the degree of activity of the disease and the amount of systemic disturbance, Class I. A including cases in an early stage, afebrile, with a moderate pulse-rate, and Class III. C those with advanced disease and running a rapid course, with considerable systemic disturbance. What is eventually desired is a classification which will be of international and not of parochial signification; and to secure such a standard we must avoid on the one hand too much elaboration, which would prevent easy tabulation, and on the other a too great simplicity, which would give an altogether insufficient representation of the important factors in cases of pulmonary tuberculosis.—I am, Sir, yours faithfully,

THOMPSON CAMPBELL, M.D.Glasg.,
Chief Tuberculosis Officer for the West Riding of Yorkshire.
County Hall, Wakefield, May 30th, 1916.

LAND SETTLEMENT AFTER THE WAR: A COMMENT.

To the Editor of THE LANCET.

SIR,—The Final Report, Part I., of the Departmental Committee appointed to consider the scheme for settlement of discharged sailors and soldiers on the land after the war, discloses two proposed methods. One is the formation of "State Colonies" on tracts of land purchased for the purpose by the Board of Agriculture and Fisheries. The other is the encouragement, by all practicable means, of county councils to provide land for men who wish to settle in the neighbourhood from which they came and to which they are accustomed (par. 105), for this reason being averse from joining a "State Colony."

Long before the present war a Royal Commission obtained evidence that urban immigration is a potent cause of physical degeneration. "Back to the Land!" became a political catch-phrase, and glowing pictures were drawn by enthusiasts of the prompt recovery of our national physique that would ensue. Saner exponents of the movement have recognised that something more discriminating is needed than a simple exodus of our urban masses into the land to possess it. The social upheaval caused by the war and the prospective disbanding of hundreds of thousands of men at its close has encouraged the Government to inaugurate a scheme for the repeopling of depleted districts and the reconstitution of sturdy rural stocks by settling discharged soldiers in the projected "State Colonies," and for restraining rural emigration through extension of the land-purchasing powers of county councils.

But will the synthetic article compounded in these colonies prove equal to the natural product? Is the complex origin and evolution of our agricultural stocks understood?

The British people may be regarded as an amalgam of two elements, one native, the other intrusive. The native element is a branch of the small brunette long-headed race known as Iberian or Atlanto-Mediterranean. It probably settled in this country in early neolithic days. The traces of an earlier race, supposedly discernible, may be ignored for present purposes. The intrusive element is derived from various races which invaded the country in historic or late prehistoric times. Being evolved in regions differing somewhat in climate from the British Isles certain disabilities attach to their migration. For example, blonde types, such as derive from the Scandinavian or Anglo-Saxon, cannot live on a damp soil or thrive in urban life because the regions of their characterisation have mostly a sandy soil with relatively low rainfall, and they lived in villages of open formation.[1] The Jews thrive in cities owing to their long racial experience of urban life, but they are prone to catarrhs, &c., in North-West Europe because of their remoter evolution in South-West Asia. The snuffle of Whitechapel is unknown in the Italian ghettos. Analogous aptitudes and disabilities characterise other intrusive types and their derivatives.

The greater invasions ended with the Norman Conquest. After this the inhabitants of the British Isles, particularly in England, settled down to steadily developing agricultural pursuits. The result was the formation of innumerable small communities intermarrying little with one another. As century succeeded century these communities, by persistent inbreeding, became more and more specialised for local conditions of climate, food, and occupation, developing a close attachment to the soil on which they were bred. In these circumstances, whatever the original cross-breeding, certain strains ultimately became dominant, the others being eliminated. Subtypes developed, discernible at sight to those familiar with them, though presenting recognisable traits of the original race or races from which they were derived. The advent of the Industrial era, with the urban immigration it entailed, has shown that their local specialisation has made these folk bad migrants to alien environments. This holds good, however, not merely of urban immigration but also of rural redistribution. The fair-skinned peasantry of the Sussex Downs cannot live on the heavy clay of the Sussex Weald, nor can the little, brunette, long-headed folk of the Weald thrive on light soils, especially near the sea, but they do well on the London clay, Wealden servant-girls being highly esteemed in the London suburbs.

Similar phenomena are observable in other counties and districts. People of northern stock fail commonly to benefit from south-coast health-resorts. West-country folk feel "shrivelled up" on the east coast, and the east-coasters find their energy gone in the south or west. Those bred on the plateaus fare ill in the river valleys, and *vice versa*. The children are hit hardest because the immature organism is more sensitive than the adult to environmental influences. Testimony is readily forthcoming in many rural districts of the heavy incidence of disease on the newcomer, as compared with the native. These are the results of local specialisation in varied degree, and unless they are taken into account in endeavouring to reconstitute our virile but vanishing rural stocks there is danger of a fiasco comparable to Louis XII.'s experiment of the same kind. It is recorded that he uprooted certain peasant communities and planted them in the valley of the Durance, made desolate by the massacre of the Waldensians. To-day they present the most goitrous, cretinous, degenerate community in the whole range of the Alps.[2]

If the contentions here set forth are accepted, it follows that the fullest support should be given to that part of the Government scheme relating to county council settlements, because it encourages the development of already adjusted communities and keeps the stocks clear of inadaptable strains which might introduce degenerative influences. On the other hand, there would be an element of hazard in the formation of State Colonies, an element in any case substantial but varying in degree with the discrimination exercised in the selection of candidates. Ancestral derivation, as well as aptitude for agriculture, should be considered. The former, taken in conjunction with the candidate's physical type, might afford a valuable indication of the district to which he would be best suited.

Further facts and observations bearing on this subject may be found in the following:—

Harry Campbell, The Causation of Disease; Beddoe, Anthropology and Medicine; Allbutt's System of Medicine, vol. i.; Shrubsall, Physical Characters and Morbid Proclivities, St. Bartholomew's Hospital Reports, 1903; Sir William Bennett, Points Relating to Tuberculous Glands, *Practitioner*, June, 1910; Lieutenant-Colonel Woodruff, Medical Corps, U.S. Army, in his work, Tropical Light and Expansion of Races; and his papers, The Harmful Effects of Small Amounts of Heat and Light, *American Medicine*, vol. vii., The Eugenics of Migrants, *Eugenic Review*, January, 1911, vol. ii., No. 4; also, by the writer, articles in the *New Age*, June 1st, 1911, *School Hygiene*, September, 1911, *Clinic Journal*, August 9th, 1911, *British Medical Journal*, August 17th, 1912, and August 2nd, 1913.

I am, Sir, yours faithfully,

J. STEWART MACKINTOSH, M.D. Durh., &c.,
Fellow of the Royal Anthropological Institute.

THE MEANING OF THE SO-CALLED REACTION OF DEGENERATION.

To the Editor of THE LANCET.

SIR,—In your issue of June 3rd there appears an article by Captain C. E. H. Milner on the function of the medullary nerve sheath. He quotes four cases of nerve injury: in the first he says that faradic response persisted for eight days after nerve severance; and in the remaining three that voluntary power returned long before reaction to faradism. I gather from his remarks that he considers these to be new observations—at any rate with regard to the return of voluntary power before faradic response. I can hardly think that the long-established fact that electrical reactions, as tested by the older methods, are practically unchanged for some days after nerve severance, was previously unknown to him.

The faradic coil is, in point of fact, the most unsuitable instrument imaginable for scientific testing. Various French writers, and in England the late Dr. Lewis Jones, have shown that, provided the body resistance remains constant, the vigour of muscular response depends upon the voltage used and upon the duration of each individual electrical impulse. To these factors must be added the *rate* at which the impulses are delivered, supposing them to be sufficiently frequent to produce a tetanising effect. Not a single one of these important factors is under control when using the ordinary medical coil, which therefore only permits of rough idea of the electrical excitability of the muscle. Galvanic testing as usually applied is almost equally inexact: for milliampèremeter readings, without standardisation of voltage, resistance, and size of pads, are valueless.

To provide a means of accurate testing Dr. Lewis Jones introduced his now well-known condenser apparatus, in which the voltage is fixed and the duration of each impulse known. The present writer has introduced a modification in which, should a tetanus be desired, the number of impulses per second is also under control. Tested by a Lewis Jones apparatus, a muscle whose motor nerve has been divided shows a steady increase in the length of impulse required to excite it almost from the first day, until after six or eight weeks the largest condensers (longest impulses) are required to cause movement, and what used to be called "the reaction of degeneration" is fully established. It used to be thought that, so long as this peculiar electrical response persisted, a muscle was, if not incapable of recovery, at least for the time being in a parlous state. Cases of its persistence after return of voluntary power were known, but were looked

[1] Vide Tacitus on the "Germans."

[2] See Whymper, Scrambles in the Alps.

on as rare exceptions. The experience of this war has shown the phenomenon to be by no means uncommon, so that a few months after an injury even the worst form of electrical response is not *in itself* of bad prognostic import. We often find that a muscle which has recovered some voluntary power, but not faradic reaction, nevertheless shows definite improvement when tested with the condenser instrument; but this is by no means always the case. Nevertheless, we may always be sure when we find that high condenser numbers are still required (old galvanic response), that *at some time in the past* there was complete bleckage of all motor impulses, indicating a severe injury to a motor nerve. These points have been insisted on by the present writer in various papers, and failure to appreciate them is responsible for much of the criticism which has been levelled against electrc-diagnosis and prognosis. It will thus be seen that the so-called "reaction of degeneration" may occur in a muscle which has clinically recovered, and it would therefore be better to drop the term altogether, and to state simply the length of condenser impulse required to excite a muscle at a given voltage.

As to Captain Milner's argument concerning the electrical conducting powers of the medullary sheath, I am at a loss to follow it. A muscle will still respond to faradism (on short condenser impulses) when the nerve-endings are thrown out of action by curare; therefore, as is pointed out by Lewis Jones in his text-book of "Medical Electricity," the failure of response must be due to some change within the muscle, and cannot be dependent upon the condition of the sheath of the motor nerve. Whatever this change may be, it can obviously persist after voluntary power is re-established; and in this connexion it is interesting to note that voluntary movement is at first usually sluggish, and the contraction resembles that of unstriped muscle. There would appear to be scope here for pathological investigation.

The whole subject of electro-diagnosis and prognosis bristles with difficulties, and the path of the beginner is beset with gins and pitfalls. Nevertheless, it is a most fascinating branch of medicine, enabling those versed in it to prophesy with confidence and success. Any of your readers interested in the matter will find it discussed in detail in a paper which I read before the Section of Surgery, Royal Society of Medicine, and which was published in THE LANCET of Feb. 19th, 1916.

I am, Sir, yours faithfully,

FRANCIS HERNAMAN-JOHNSON.

Cavendish-square, W., June 3rd, 1916.

ON THE ILL-TREATMENT OF GENITAL PROLAPSE.

To the Editor of THE LANCET.

SIR,—Dr. W. E. Fothergill gibes at ventrifixation and hysterectomy as operative measures in prolapse, and yet recommends as part of a curative procedure an equally futile measure—repair of the perineum. It takes no genius to discover the value of the perineum or the so-called perineal body in supporting the pelvic viscera. All one has to do is to pass one finger into the rectum and the thumb into the vagina, and to feel what is in the tissues between. To begin with, the so-called perineal body which is grasped in this way, and which in anatomical sections appears, and in diagrams is represented as, a wedge-shaped mass of tissue of some size, can be flattened quite easily from before backwards into a thin septum; and the only important structure in it is the ring sphincter of the anus, which can easily be felt. In the next place, the perineal body is found not infrequently completely ruptured, without any sign or symptom of prolapse, even when the tear was caused years ago and the patient has been living an active life. How rarely are patients who come for treatment for incontinence of fæces from this cause found to be suffering from prolapse? I have never seen a single one. Unfortunately, Dr. Fothergill appears ignorant of these facts or of their meaning; and thus it is not to be expected he can deduce from them the conclusion that repair of the perineum is of no value in the treatment of prolapse.

As regards the other measures recommended by Dr. Fothergill, experience has shown they are equally unreliable. He says "all can be set right" by plastic vaginal surgery. He makes no reference to the percentage of recurrences after such operations in his cases; his words suggest he has no recurrences. If so, he must indeed be happy; and he attributes none of his success to the invaluable concomitant of plastic vaginal surgery—rest in bed. Rest in bed, by itself, will cure some cases of prolapse; it will even cure them after the bases of the broad ligaments have been injected with quinine. Rest in bed and an easy time subsequently will work wonders—far greater wonders than any plastic vaginal surgery.

The reason the operative procedure in many cases of prolapse is so bad, and is so often followed by recurrence, is that the nature of the condition is not yet generally understood. Prolapse is of the nature of a hernia; it is a hernia of pelvic viscera through an opening in the muscular parietes, closing in the bony pelvic outlet (an outlet measuring roughly 4 in. by 5 in.), just as a protrusion in the inguinal, femoral, or umbilical regions of abdominal contents through the muscular parietes of the abdomen is a hernia. The content of the protrusion is of secondary importance; in prolapse the protrusion may consist of bladder, uterus or rectum, which as they come down invaginate the vagina, these various parts participating in different cases in different degrees according to their arrangement and the direction of the displacing force, just as an inguinal hernia may contain intestine, or omentum, or the gall-bladder or the ovary. And each condition arises in the same way: both are produced by strain—frequently repeated. In prolapse, strain causes whatever viscus is over the natural aperture in the pelvic parietes to "come down" through the natural aperture in the parietes, just as strain causes whatever viscus is against the natural aperture in the abdominal parietes to protrude. The protrusion occurs because the natural aperture is larger than normal, or because the striated muscle bounding it has become weaker, and so the aperture can be more easily dilated than normal. Prolapse often follows the resumption of active life soon after childbirth, because childbirth often causes extensive injury of the pelvic muscular parietes, and leads to permanent enlargement of the natural aperture in that parietes; but prolapse often appears for the first time years after childbirth, because the muscular parietes have not been sufficiently injured at childbirth and have remained strong enough for their work and only subsequently with advancing years have become weak.

Surgeons do not operate on hernia in people with weakened abdominal walls, because in such cases the hernia tends to recur, and often does recur, and success is unlikely; yet gynæcologists expect to cure prolapse in all cases. With too few exceptions they pay no attention to the muscular parietes of the pelvis, which, according to Dr. Fothergill, are vestigial in structure and tail-moving in origin. In the cases referred to surgeons advise a truss; they do not recommend a plastic operation on the skin and subcutaneous tissues covering the hernial protrusion or placed around it, or advocate plastic operations on the attachments of the viscera inside the abdomen, comparable to the plastic vaginal surgery performed for prolapse. They do not, for instance, shorten mesenteries—although in hernia the mesenteries have become longer. Or, if they operate, they insert a large filigree over the hernial site; they do not, however, place this outside the muscular wall in the fat beneath the skin. They place it inside the muscular wall, between it and the peritoneum.

It is left for gynæcologists to recommend a plastic operation on the skin and superficial fascia, and on the viscera themselves inside the pelvis, to overcome a similar complaint. Dr. Fothergill may "repair the perineum," perform colporrhaphy, and with the same breath decry the use of pessaries. But pessaries are but filigrees in a different form, and they are placed in the same relative position as that used by McGavin in his abdominal operations. Truly, they are placed within the vagina, but they are placed in that part of the vagina which is within the pelvic cavity, which is above the pelvic floor—the pelvic muscular parietes—between the pelvic floor and superjacent visceral structures. The use of the pessary in many cases of prolapse is the finest, the best, and often the only efficacious treatment. This is not only the experience of ages and of present-day practitioners of medicine, including many real specialists; it is also the result of a searching theoretical and academic inquiry which will bear probing even to its foundations.

I am, Sir, yours faithfully,

Rugby, June 5th, 1916. R. H. PARAMORE, F.R.C.S. Eng.

THE DESTRUCTION OF COCKROACHES.

To the Editor of THE LANCET.

SIR,—In the useful and suggestive article on the cockroach, by Dr. J. J. H. Holt, in THE LANCET of June 3rd, there are certain biological factors concerned in the subject of his researches that, if ignored, may lead to erroneous and harmful deductions. There is a wide difference between the application of inhalants and food poisons. If an insect is put in a glass-stoppered jar with an inhalant poison the effect is automatic, entirely independent of the inclination of the imprisoned animal, the rapidity of death being solely dependent on the toxic strength of the inhaled poison. Where a poison food is used its effect depends entirely on the willingness of the animal to eat it. Every biologist is familiar with the fact that almost all animals when first captured and placed in confinement refuse to eat. I have confined mature insects in a jar with their favourite food which they have completely ignored for days. (This is not the case with caterpillars, which readily feed and are easily bred.) An animal must breathe, but is not bound to eat, at least for a time, and, as Dr. Holt says, in the case of the cockroach it can live 76 days without food.

To take two examples which Dr. Holt gives in his table of experiments, the latter of them being of personal scientific interest to me. The lethal effects of all the volatile bodies, given in his first table, are all much more rapid than those of food poisons in the last table, placed in covered dishes or bottles with imprisoned insects. This gives no reliable time effect whatever, the only comparable time test being to use the remedy on cockroaches in their free natural habitats. I can cite a striking example of this in the use of one of the remedies Dr. Holt mentions. Some time back, after strong complaints by the Local Government Board as to a plague of cockroaches at a large Poor-law institution here, with many hundreds of inmates, I was consulted with a view to destroying the pests. After careful inspection of the place, I found that fumigation was out of the question, and that to prevent dead cockroaches becoming mixed in the food they must be allowed to retire to their hiding places before death. On these lines I worked until every cockroach in the place was *killed*. Their hiding places were easily discovered, and one notable example was a dark, well-ventilated chamber where they clustered on the walls in the usual serried ranks to the number of several thousands—a huge dark mass. The food poison, which had been spread usually only in the kitchen and bakeries, was put down in this special hiding place, and on my next visit within three days there was nothing but a heap of dead cockroaches. This was how Blattis, to which Dr. Holt refers, came into existence. Far from having any repellent effect on cockroaches, its whole influence is in its attractiveness, which is demonstrated by the avidity with which they devour it, and they never require a second dose. It is all a question of food, physiology, and habit of the insect dealt with, these requiring special study and research for each species. Quite different material had to be used in the case of a pest that infested the house of a medical friend who was unacquainted with the insect, which is popularly known as the "silver fish" (*Lepisma saccharina*), which was entirely killed off in 48 hours with a powdery food mixed with a non-volatile poison.

To stove dwellings and institutions, such as war hospitals, &c., is practically impossible, and though a remedy that leaves no dead insects lying about may not produce such dramatic effects as stoving, those who are acquainted with the life-history and reproduction of the cockroach know well that an exterminator that operates at once, and in a few hours produces death, with a cumulative effect due to the preservation of the poison in the chitinous covered bodies of cannibalistic cockroaches, is a far more effective exterminator. My official position brings me numerous inquiries from many sources about insect pests, which are all carefully studied out and remedies adopted on the lines indicated.—I am, Sir, yours faithfully,

Museum, Sheffield, June 5th, 1916. E. HOWARTH, F.Z.S.

To the Editor of THE LANCET.

SIR,—With reference to the paper on this subject in THE LANCET of to-day's date I may say that my experience of Dalmatian insect powder on cockroaches is quite different from Dr. J. J. H. Holt's. The cockroaches appeared in a newly built house in large numbers, so I tried putting down insect powder along the floor near the walls. The next morning dozens were found nearly dead, quite unable to run, and it was a simple matter to sweep them up and burn them. After a few days of this treatment they all vanished. It seemed to me that the cockroaches had been trying the effect of eating the insect powder, which they probably would not do if confined in a glass-stoppered bottle, such treatment being calculated to take away their appetite.

I am, Sir, yours faithfully,

Sidmouth, June 3rd, 1916. G. BURTON-BROWN, M.D. Surgeon, R.N. (retired).

SIR WILLIAM JENNER'S DISCOVERY OF THE IDENTITY OF TYPHOID FEVER.

To the Editor of THE LANCET.

SIR,—In Dr. R. O. Moon's Chadwick lecture on typhus fever, published in THE LANCET of June 3rd, there is an error. It was at the London Fever Hospital and not at the London Hospital that Jenner's researches established the non-identity of typhus and typhoid fevers.

I am, Sir, yours faithfully,

June 3rd, 1916. CHARLES R. BOX, Physician to the London Fever Hospital.

Obituary.

CHARLES EDWARD FITZGERALD, M.D. DUB., F.R.C.P. IREL.,

HONORARY SURGEON-OCULIST IN ORDINARY TO THE KING IN IRELAND; FORMERLY PRESIDENT OF THE ROYAL COLLEGE OF PHYSICIANS OF IRELAND.

THE death occurred in Dublin on May 27th, as we have already announced in THE LANCET, of Dr. Charles E. FitzGerald, formerly President of the Royal College of Physicians of Ireland, at the age of 73. Few of his professional friends had heard of his illness, so that the news of his death came to them as something of a shock.

Charles Edward FitzGerald was born in Dublin in 1843, his father being Baron F. A. FitzGerald of the Court of Exchequer in Ireland. He received his education in Trinity College, Dublin, where he took his degree in Arts in 1864, proceeding to the M.B. in 1868. In this year he went to Paris, where he studied especially ophthalmology under Galezowski. On returning to his native city he commenced practice as an ophthalmic surgeon, and he devoted himself to that branch of medicine up to the time of his death. His success was alike the result of his skill, high personal qualities, and appetite for work, the last being proved by the number of the appointments that he held. In 1873 he was appointed ophthalmic and aural surgeon to the House of Industry Hospitals; he held the post for ten years, and was subsequently consulting ophthalmic surgeon to the same institutions. He was for many years lecturer on ophthalmic surgery in the Carmichael School of Medicine, and from 1889 to his death professor of ophthalmic and aural surgery in the School of the Royal College of Surgeons in Ireland. In 1876 he was appointed surgeon-oculist in ordinary to the Queen in Ireland, and similar posts were given to him by her successors, King Edward and the present King. He was at one time surgeon to the National Eye and Ear Infirmary; when that institution was merged in the Royal Victoria Eye and Ear Hospital he retired from active hospital work. Having become a Fellow of the Royal College of Physicians in 1886, in 1912 he was elected President, and he held the office with much distinction for two years.

FitzGerald early in his professional life found himself in the enjoyment of a large practice, but although his ophthalmological work necessarily occupied most of his time he made thoroughly good use of his leisure when it was obtained. He was devoted to music, and cultivated generally his literary and artistic tastes. He travelled a good deal, visiting America frequently. He was much pleased with his unanimous election to the presidency of the Royal College of Physicians of Ireland in 1912, for by this time he had largely withdrawn from active interest in professional affairs. He devoted himself to the duties of the important office with

unexpected ardour. His retired life had made him almost a stranger to many of the Fellows, while even those who knew him were surprised at the practical ability which he brought to his new work. Elected on grounds of seniority and because of his position in practice, he showed himself a distinguished and dignified chairman, tactful in eliciting the opinions of others, quick in grasping the points of a problem, and thoroughly painstaking in seeking the right solution. His retirement was a matter of great regret to his colleagues, while FitzGerald, as a mark of his affection for the College, presented to the corporation a badge of office to be worn by subsequent Presidents.

Dr. FitzGerald was twice married. By his first marriage he leaves four sons. To them and to his widow we offer our sincere sympathy.

WALTER BROCK PARSONS, M.R.C.S., L.R.C.P. LOND.

WE regret to announce the death of Mr. Walter Brock Parsons, which occurred somewhat suddenly at West Southbourne, Hampshire, on June 3rd. For five years or more he had fought strenuously and uncomplainingly against the attacks of a tuberculous infection, which first manifested itself while he was acting in 1910 as a member of the staff of THE LANCET, and the sudden termination to his life belied hopes of permanent cure which had recently become good.

Walter Brock Parsons, the son of an Indian official, was born in 1875, and qualified in 1898 as M.R.C.S. Eng., L.R.C.P. Lond., from the medical school of St. Bartholomew's Hospital. His first appointment was that of resident assistant surgeon at the Western General Dispensary. Here he did much work in the special department for diseases of the eye under Dr. Lindsay Johnson. Later he served as house surgeon to the North-West London Hospital, and obtained in particular a large experience of children's diseases and of dermatology. He was then appointed resident medical officer at the Farringdon Dispensary, where the special departments for diseases of the nose, throat, and ear especially attracted him, and later he decided to accept the invitation of Mr. J. Jackson Clarke to assist him in his work at the City Orthopædic Hospital. He attended with Mr. Clarke regularly, being clinical assistant to the hospital until its extinction by amalgamation with other institutions in 1907, and for a prolonged period acting as a member of the surgical staff. In 1907 he became assistant in private practice to the late Mr. Noble Smith, who had been senior surgeon at the City Orthopædic Hospital, and for a short period after his death Parsons practised orthopædic surgery as a specialist. In 1910 he decided to relinquish his career as a consulting surgeon, and was appointed sub-editor of THE LANCET. In this capacity his wide clinical experience equipped him to be a capable judge of what was best in many departments of medicine, whilst his liberal outlook and high standards made him a valuable colleague. His breakdown in health, which occurred within a year of his joining the staff of THE LANCET, was very sudden, and for some months he believed that at the end of a protracted holiday he would be able to return to work. The disease, however, never lost its hold of him, though for different periods of varying duration he seemed to be escaping from its clutches.

We tender our respectful sympathies to his wife and children in their great loss.

DUNCAN MENZIES, M.A. ST. AND., M.B. EDIN.

Dr. Duncan Menzies, who died on May 28th as the result of a motor accident, was born in 1854, and was the eldest son of Mr. James Menzies of Carse, Appin, Perthshire. He received his early education in his native county, then took his degree in Arts at St. Andrews University, afterwards graduating in medicine at Edinburgh University in 1883. He came to England in 1884 and became a member of the Perthshire Association of London and also of the St. Andrews University Club and the Edinburgh University Club, London, in all of which he was keenly interested. He settled down to practise in the neighbourhood of Dorset-square, where he was well known and greatly esteemed. He was a reliable and painstaking physician, and his sympathetic disposition endeared him to a large circle of friends and patients, of whom there was a large attendance at the funeral service at St. Cyprian's.

He leaves a widow and four sons and one daughter to mourn their loss. His eldest son, at present in Salonika, is a graduate of London University and has a commission in the Royal Army Medical Corps. The three other sons are in the army, being in the Cameron Highlanders, the London Scottish, and an Officers Training Corps respectively.

CHARLES LENOX CUNNINGHAM, L.R.C.S. EDIN., L.S.A.

WE learn from a correspondent that Mr. Cunningham died suddenly on board ship on Feb. 17th on his way to South Africa. He was serving as a surgeon on the liner which afterwards grounded off Robben Island. He was formerly in practice for some years at Lower Umkomaas in Natal, where he was medical officer of health and where his advice on blackwater fever was frequently in demand. His experience of malaria he had gained in his earlier years on the West Coast of Africa and was partly gained by personal experience, as he had himself suffered from a severe form of malaria. Mr. Cunningham's career had been a varied one; for 23 years he served the Queensland Government in the emigration service, later he was medical officer of the Ashanti Goldfields Corporation, and he also took part in an Arctic expedition.

Mr. Cunningham was a special correspondent for THE LANCET in the Soudan, Ashanti, and South African campaigns, and the interesting descriptions which he sent us were often accompanied by sketches which, if they did not exhibit high artistic merit, at any rate showed much imaginative perception, and some of them were reproduced in our columns for their topical interest. In THE LANCET, vol. i., 1885, p. 863, "Our Correspondent's Experiences in the Soudan" are illustrated by a sketch of the redoubt and base hospital and of the entrance to the Sawakin harbour. Other sketches (vol. i., 1896, pp. 1028, 1029, 1173, and 1391) illustrate the Ashanti Expedition, and one of these shows the boat conveying Prince Henry of Battenberg to H.M.S. *Blonde*, the vessel on which he unfortunately died. Mr. Cunningham also reported on the Special Sanitary Commission of the British Emigration Service (vol. ii., 1888, p. 1041).

THE LATE DR. EDWIN F. NELSON.—Dr. E. F. Nelson, who died on May 29th at his residence in Downpatrick, was the son of a Belfast clergyman, and studied medicine at Queen's College, Belfast. In 1866 he graduated M.D. of the old Queen's University of Ireland, and at different times held the posts of medical officer of Downpatrick Union Hospital and medical officer to the troops in Downpatrick. He was surgeon-major for 31 years in the 5th Battalion of the Royal Irish Rifles, from which he retired only in 1909. Of his three sons, one, a captain in the 3rd Brahmans, was killed in France last year, and two others are officers in the army.

THE ORDER OF THE HOSPITAL OF ST. JOHN OF JERUSALEM IN ENGLAND.—The following have been appointed Knights of Grace in the Order: Surgeon-General T. P. Woodhouse, C.B., A.M.S.; Surgeon-General Sir Richard Havelock Charles, G.C.V.O., I.M.S.; and Lieutenant-Colonel P. F. O'Connor, C.B., I.M.S.; and Mrs. Ella G. A. Webb, M.D.R.U.I., has been appointed a Lady of Grace.

DR. STEEVENS' HOSPITAL.—Sir Arthur Chance, F.R.C.S.Irel., has been appointed as consulting surgeon to Dr. Steevens' Hospital, Dublin. During the early years of the hospital's existence the consulting surgeoncy was usually held by the surgeon-general to the forces in Ireland, who was, *ex-officio*, a governor of the hospital. Among the surgeons-general were included John Nichols (1730-67), William Ruxton (1767-83), Archibald Richardson (1784-87), George Stewart (1787-1814), Soloman Richards (1814-19), and Sir Phillip Crampton, Bart. (1819-58). Among others who have held the position are Samuel Croker-King, the first President of the Royal College of Surgeons in Ireland; Ralph Smith Obre, Samuel Wilmot, James William Cusack, Robert Moore Peile, Christopher Flemming, Samuel George Wilmot, William Colles, Sir George Hornidge Porter, Bart., Edward Hallaran Bennett, and Sir Charles Bent Ball, Bart.

The War.

THE CATASTROPHE TO LORD KITCHENER AND HIS STAFF.

IT is a veritable tragedy by which the country is suddenly deprived of the services of Lord Kitchener, who, with his staff, was drowned on June 5th last while starting on a special mission to Russia. But the catastrophe must be faced by us with the spirit which that great man who has gone from us always showed in adverse circumstances. Sadly will he be missed from our councils, for much remained to be done by him; but the part of his work which he actually accomplished—the raising of a gigantic citizen army in a country utterly unready for the social revolution implied—will stand to his eternal credit in the memory of a grateful country.

THE CASUALTY LIST.

The following names of medical officers appear among the casualties announced since our last issue:—

Killed.

Lieutenant J. MacC. C. Johnston, R.A.M.C., attached to the Worcestershire Regiment, was educated at Edinburgh and St. Andrews Universities, qualifying in 1913, and held the post of resident surgeon at the Royal Infirmary, Dundee. He joined the R.A.M.C. in July, 1915.

Captain J. G. Mackenzie, Australian A.M.C., graduated in 1910 at the University of Glasgow, and was in practice at Victoria, Australia, before joining the Australian Expeditionary Force.

Fleet-Surgeon F. F. Lobb, R.N., H.M.S. *Queen Mary*, received his medical education at St. Mary's Hospital, London, and qualified in 1898. After holding house appointments at St. Mary's, the London Fever Hospital, and the Female Lock Hospital, London, he joined the Royal Navy, and in 1900, while surgeon of the *Thrush*, he assisted in the rescue in a heavy sea of 13 French Malagasy subjects from the uninhabited island of Europa. He took part in the Nigerian and in the Gambian expeditions, receiving the African medal and the Aro clasp.

Surgeon C. W. Lewis, R.N., H.M.S. *Queen Mary*, qualified M.B., Ch.B. at Edinburgh University in 1914.

Surgeon M. H. de J. Harper, R.N., H.M.S. *Queen Mary*, qualified M.B., B.S. Durham in 1914.

Fleet-Surgeon W. J. Bearblock, R.N., H.M.S. *Invincible*, was educated at Guy's Hospital, London, and qualified in 1887. He had held a house appointment at the Royal Albert Hospital, Devonport.

Surgeon C. O. H. Jones, R.N., H.M.S. *Invincible*, was educated at St. Thomas's Hospital, London, where he held a house appointment later, and qualified in 1915.

Surgeon G. Shorland, R.N., H.M.S. *Invincible*, was educated at Guy's Hospital, London, and qualified in 1901. Prior to joining the Navy recently he was medical officer to the Railway Clearing House at Euston-square, London.

Fleet-Surgeon H. L. Norris, R.N., H.M.S. *Indefatigable*, was educated at St. Thomas's Hospital, London, qualifying in 1898.

Surgeon S. Punch, R.N., H.M.S. *Indefatigable*, was educated at University College, Cork, qualifying in 1912.

Surgeon A. A. Morison, R.N., H.M.S. *Indefatigable*, qualified M.B., Ch.B. at Edinburgh University in 1910, and was in practice at Craiglea Drive, Edinburgh, before joining the Navy as a temporary surgeon. He was a well-known Scottish footballer, and was formerly resident surgeon at the Royal Maternity Hospital, Edinburgh, and assistant medical officer at the Brook Hospital of the Metropolitan Asylums Board.

Fleet-Surgeon F. A. Capps, R.N., H.M.S. *Defence*, received his qualifications at Edinburgh and Glasgow in 1890.

Surgeon F. W. T. Clemens, R.N., H.M.S. *Defence*, was educated at Bristol University, qualifying M.B., B.S. Lond. in 1913. Before joining the Navy he was in practice at Bath.

Surgeon G. M. Johnson, R.N., H.M.S. *Defence*, received his education at Oxford University and at the London Hospital, and qualified in 1908. He had held the appointment of house surgeon and house physician at the Radcliffe Infirmary, Oxford.

Fleet-Surgeon H. L. Geoghegan, R.N., H.M.S. *Black Prince*, was educated at Trinity College, Dublin, qualifying in 1898.

Surgeon T. M. Wood-Robinson, R.N., H.M.S. *Black Prince*, was educated at Middlesex Hospital, qualifying in 1914. He was in practice at Dovercourt before joining the Navy.

Surgeon J. S. D. McCormac, R.N., H.M.S. *Black Prince*, received his qualifications at Edinburgh and Glasgow in 1894, and after practising in Leicester was appointed anæsthetist at the Royal Dental Hospital, London.

Surgeon G. B. Moon, R.N., was educated at Birmingham and at Edinburgh Universities, qualifying in 1904, and gave up his position as assistant medical officer at the Kent County Asylum, Barming Heath, to join the Navy shortly after the outbreak of war.

Surgeon-Probationer J. E. MacIntyre, R.N.V.R., H.M.S. *Ardent*.

Surgeon-Probationer D. J. T. Oswald, R.N.V.R., H.M.S. *Nomad*.

Surgeon-Probationer A. Joe, R.N.V.R., H.M.S. *Nestor*.

Surgeon-Probationer R. Walker, R.N.V.R., H.M.S. *Shark*.

Surgeon-Probationer D. H. Ferris, R.N.V.R.

Surgeon-Probationer H. J. Dingle, R.N.V.R.

Surgeon-Probationer J. Hislop, R.N.V.R.

Lost in H.M.S. Hampshire.

Fleet-Surgeon P. G. Williams, R.N., was a student at St. Thomas's Hospital, London, and qualified in 1889.

Surgeon H. F. McNally was educated at Queen's University, Belfast, qualifying in 1915.

Surgeon H. G. Chaplin was a student at St. Thomas's Hospital, qualifying in 1914, and afterwards returning to Newfoundland.

Died.

Temporary Lieutenant G. S. Engineer, I.M.S.

Lieutenant H. R. Griffith, R.A.M.C., qualified in 1889, graduating at Dublin University, and died from heart failure at Press Heath Camp, Whitchurch.

Died of Wounds.

Lieutenant-Colonel A. W. Tanner, Canadian Army Medical Corps, graduated at the University of Toronto, 1899, and was in practice at Moosomin, Saskatchewan, before joining the Canadian Expeditionary Force.

Captain W. N. Watson, R.A.M.C., attached to the King's Own Scottish Borderers, graduated in 1913 at Edinburgh University, and joined the R.A.M.C. in December, 1914. He was awarded the Military Cross in connexion with the battle of Loos, and took a combatant commission in April last.

Wounded.

Staff-Surgeon B. R. Bickford, R.N.

Captain J. J. Jamieson, Canadian Army Medical Corps.

Captain J. A. Reid, Canadian Army Medical Corps.

Believed to have been taken Prisoners at Kut-el-Amara.

R.A.M.C.—Maj. E. V. Aylen; Maj. E. Bennett; Lt.-Col. H. O. B. Browne-Mason; Capt. A. S. Cane; Lt.-Col. J. Hennessy, C.B.; Capt. C. E. M. Jones, attached to the Hampshire Regt.; Capt. A. T. J. McCreery; Capt. R. K. Mallam; Capt. L. Murphy; Capt. T. E. Osmond, attached to the Norfolk Regt.; Lieut. F. T. Simpson, attached to the Dorset Regt.; and Capt. J. Startin, attached to the Oxford and Bucks Lt. Infantry.

I.M.S.—Capt. L. A. P. Anderson; Maj. S. Anderson; Capt. D. Arthur; Lt. N. K. Bal; Maj. C. H. Barber; Capt. R. C. Clifford; Temp. Lt. A. Y. Dabholcar; Capt. S. G. S. Haughton; Col. P. Hehir, C.B.; Capt. H. H. King; Capt. J. S. S. Martin; Lt. R. V. Martin; Capt. K. K. Mukerji; Capt. C. Newcomb; Maj. W. MacM. Pearson; Capt. M. L. Puri; Capt. F. H. Salisbury; Lt. W. C. Spackman; Temp. Lt. N. R. R. Ubhaya; and Capt. G. O. Western, Sub. Med. Dept.

DEATHS AMONG THE SONS OF MEDICAL MEN.

The following sons of medical men must be added to our list of those who have fallen during the war:—

Lieutenant J. MacC. C. Johnston, R.A.M.C., elder son of Dr. R. Johnston, of Nethergate, Dundee.

Captain J. C. C. Barnes, Border Regiment, youngest son of Lieutenant-Colonel H. J. Barnes, R.A.M.C., of Colyton, Devon.

Lieutenant H. C. N. Taylor, London Regiment, younger son of Dr. F. Taylor, F.R.C.P., of Wimpole-street, London.

Lieutenant R. E. Paterson, R.N., H.M.S. *Fortune*, younger son of Professor A. M. Paterson, of Liverpool.

Midshipman E. R. Bates, R.N., H.M.S. *Indefatigable*, elder son of Dr. J. E. Bates, of Wimbledon, Surrey.

Midshipman W. F. R. A. Cooper, R.N., H.M.S. *Indefatigable*, only son of the late Dr. T. G. D. Cooper, of Penang.

Lieutenant R. I. Faulkner, R.N., H.M.S. *Black Prince*, younger son of Dr. C. I. Faulkner, late of Escrick, Yorks.

Midshipman E. T. Hodgson, R.N., H.M.S. *Invincible*, younger son of Dr. H. Hodgson, of Alresford, Hants.

Captain the Rev. C. W. Lydall, R.N., H.M.S. *Lion*, son of the late Dr. W. H. Lydall, of London,
Second Lieutenant C. R. Hind, South Staffordshire Regiment, second son of Mr. A. E. Hind, F.R.C.S., of Jersey.
Fleet-Surgeon H. L. Norris, R.N., H.M.S. *Indefatigable*, youngest son of the late Dr. H. E. Norris, of Charmouth, Dorset.
Surgeon G. B. Moon, R.N., eldest son of Dr. G. D. Moon, of Derby.
Surgeon A. A. Morison, R.N., H.M.S. *Indefatigable*, sixth son of the late Dr. D. Morison, of Bengal.
Captain H. R. H. O'Brien, Royal Field Artillery, only son of Lieutenant-Colonel J. O'Brien, I.M.S., of Instow, North Devon.

THE HONOURS LIST.

The following awards to medical officers, either for services rendered in connexion with military operations in the field or for valuable services in connexion with the war, are announced in the list of Birthday Honours issued at the end of last week:—

To be C.B. (Military Division).—Surg.-Gen. W. G. A. Bedford, C.M.G.; Surg.-Gen. R. Porter; Surg.-Gen. T. J. O'Donnell, D.S.O.; Col. R. H. Luce, T.F. Res.; Lieut.-Col. C. C. Cumming, R.A.M.C.

To be K.C.M.G.—Col. (Hon. Surg.-Gen.) W. D. C. Williams, C.B., Australian A.M.C.

To be C.M.G.—Col. C. E. Harrison, C.V.O., A.M.S. (T.F.); Col. H. N. Thompson, D.S.O., A.M.S.; Col. T. B. Beach, A.M.S.; Col. C. W. R. Healey, A.M.S.; Col. J. B. Wilson, A.M.S.; Col. A. L. F. Bate, A.M.S.; Col. E. C. Freeman, A.M.S. (T.F.); Col. A. Fullerton, A.M.S.; Lt.-Col. H. E. R. James, C.B., R.A.M.C.; Lt.-Col. A. H. Lister, R.A.M.C. (T.F.); Lt.-Col. O. L. Robinson, R.A.M.C.; Lt.-Col. H. A. Bray, R.A.M.C.; Lt.-Col. (temp. Col.) E. W. Slayter, R.A.M.C.; Lt.-Col. T. P. Jones, R.A.M.C.; Lt.-Col. G. S. Thom, R.A.M.C.; Lt.-Col. J. V. Forrest, R.A.M.C.; Lt.-Col. L. Humphry, R.A.M.C.; Temp. Lt.-Col. W. H. Willcox, R.A.M.C.; Lt.-Col. and Hon. Col. Sir J. R. A. Clark, Bart., C.B., R.A.M.C. (T.F.); Maj. G. Hall, R.A.M.C. (T.F.); Lt.-Col. B. J. Newmarch, Australian A.M.C.; Lt.-Col. (temp. Col.) J. T. Fotheringham, Canadian A.M.C.; Lt.-Col. P. C. Fenwick, New Zealand A.M.C.

To be Brevet Lieutenant-Colonel.—Maj. (temp. Brig.-Genl.) A. C. Geddes, Unattached List (T.F.).

D.S.O.—Maj. H. V. Bagshawe, R.A.M.C.; Maj. B. S. Bartlett, R.A.M.C.; Lt.-Col. E. A. Bourke, R.A.M.C.; Capt. D. B. Chiles-Evans, R.A.M.C. (T.F.); Surg.-Maj. R. M. Cowie, 1st Life Guards; Maj. J. M. Darling, Spec. Res. R.A.M.C.; Maj. C. Farrant, R.A.M.C. (T.F.); Maj. (temp. Lt.-Col.) R. F. M. Fawcett, R.A.M.C.; Lt.-Col. T. H. Forrest, R.A.M.C. (T.F.); Maj. A. N. Fraser, R.A.M.C.; Capt. E. D. Gairdner, R.A.M.C. (T.F.); Lt.-Col. J. S. Gallie, R.A.M.C.; Lt.-Col. J. Grech, R.A.M.C.; Maj. P. H. Henderson, R.A.M.C.; Maj. G. W. Heron, R.A.M.C.; Capt. A. H. Heslop, R.A.M.C.; Capt. G. S. Husband, I.M.S.; Maj. (temp. Lt.-Col.) A. C. Osburn, R.A.M.C.; Lt.-Col. E. P. Sewell, R.A.M.C.; Capt. W. C. Smales, R.A.M.C.; Maj. W. M. B. Sparkes, R.A.M.C.; Maj. C. P. Thomson, R.A.M.C.; Capt. (temp. Maj.) A. E. Webb-Johnson, R.A.M.C. (T.F.); Maj. J. B. McLean, Australian A.M.C.; Capt. T. B. Brown, Australian A.M.C.; Capt. (temp. Maj.) R. D. Campbell, Australian A.M.C.—Major G. W. K. Crosland, late W. Riding Regt. (T.F.), who has received the distinction, is a medical man, and was serving in a combatant capacity.

Military Cross.—Temp. Capt. G. S. Blandy, R.A.M.C.; Capt. W. A. Brechin, R.A.M.C.; Temp. Capt. A. Bremner, R.A.M.C.; Capt. L. C. Bruce, R.A.M.C. (T.F.); Temp. Capt. W. H. Butler, R.A.M.C.; Temp. Lieut. I. W. Corkey, R.A.M.C.; Capt. W. R. Douglas, R.A.M.C.; Capt. K. K. Drury, R.A.M.C., Spec. Res.; Temp. Capt. C. R. Dudgeon, R.A.M.C.; Capt. G. E. Dyas, R.A.M.C.; Temp. Capt. A. C. Edwards, R.A.M.C.; Capt. T. J. C. Evans, I.M.S.; Capt. J. F. Farrow, R.A.M.C. (T.F.); Capt. A. D. Fraser, R.A.M.C.; Temp. Lt. C. T. Galbraith, R.A.M.C.; Capt. J. Gilmour, R.A.M.C.; Capt. G. R. Grant, R.A.M.C.; Capt. E. R. G. Greville, R.A.M.C.; Temp. Capt. A. C. Keep, R.A.M.C.; Temp. Capt. A. J. Kendrew, R.A.M.C.; Capt. C. Lovell, R.A.M.C.; Temp. Capt. M. A. MacDonald, R.A.M.C.; Lt. J. S. McCallam, R.A.M.C.; Capt. F. A. McCammon, R.A.M.C.; Capt. J. D. MacCormack, R.A.M.C., Spec. Res.; Temp. Lt. P. McGibbon, R.A.M.C.; Capt. H. S. Milne, R.A.M.C.; Temp. Lt. J. W. O'Brien, R.A.M.C.; Temp. Capt. H. J. Orr Ewing, R.A.M.C.; Capt. H. F. Panton, R.A.M.C.; Capt. D'Arcy Power, R.A.M.C.; Capt. G. E. J. A. Robinson, R.A.M.C.; Surg.-Capt. W. T. Rowe, S. Notts. Hrs. (Yeo.); Temp. Capt. H. H. Sampson, R.A.M.C.; Capt. L. R. Shore, R.A.M.C.; Lt. C. J. Stocker, I.M.S.; Temp. Capt. M. A. Swan, R.A.M.C.; Capt. D. C. Taylor, R.A.M.C.; Temp. Lt. N. S. Whitton, R.A.M.C.; Capt. H. F. Wilkin, R.A.M.C. (T.F.); Capt. G. E. Kidd, Canadian A.M.C.

THE REGULATIONS FOR THE PROFESSIONAL COMMITTEES.

The following are the Regulations for Professional Committees in respect of duly qualified medical practitioners under the Military Service Acts, 1916:—

1.—(1) Subject as hereinafter provided, there shall be a Central Professional Committee for England and Wales and a Central Professional Committee for Scotland, consisting in each case of not less than 12 nor more than 25 members, appointed by members of the medical profession in such manner as the Army Council may approve, and representative of the profession, to which all applications for certificates of exemption made to a Tribunal in England or Wales or in Scotland as the case may be by or in respect of practitioners on any grounds other than that of conscientious objection shall be referred by the Tribunal to which such applications are made. (2) If the Army Council are satisfied that any existing Professional Committee which has been recognised by them for the purpose of making arrangements for the selection of practitioners for service during the war in the Naval and Military Forces of the Crown has been appointed by members of the profession and is representative of the profession, they may, if they think fit, and subject to such conditions as they may impose, approve such Committee for the purpose aforesaid, and in that case the Professional Committee so approved shall be the Central Professional Committee for the purposes of these regulations. (3) The Central Professional Committee may, with the approval of the Army Council, appoint or recognise such Local Professional Committees as they may think necessary for the purposes hereinafter mentioned.

2. Where an application for a certificate of exemption on any ground other than that of conscientious objection is made by or in respect of a practitioner to a Tribunal, the Tribunal shall forthwith notify the appropriate Central Professional Committee that the application has been made and shall send to that Committee the application together with any statement or particulars furnished to the Tribunal by or in respect of the practitioner.

3.—(1) The Central Professional Committee shall, subject as hereinafter provided, thereupon consider the matter, and, if they are satisfied on the facts before them that a certificate of exemption (whether absolute, conditional, or temporary) ought to be granted they shall make a recommendation to the Tribunal accordingly. (2) The Committee in any case in which they are of opinion that the application does not give the required or sufficient particulars or does not disclose *primâ facie* grounds for considering the application, may require further and better particulars or grounds, as the case may be, to be given; and if such further and better particulars or grounds are not delivered to the Committee within seven clear days after such notification has been sent, or within such extended time as may be allowed by the Committee, the Committee may make forthwith such recommendation as they think appropriate. (3) For the purpose of ascertaining the facts relevant to the decision of an application the Committee may, and if so required by the practitioner in respect of whom the application is made, shall hear the practitioner and such witnesses as he may desire to call, and may take into consideration any written statements sent by or in respect of any practitioner. (4) At least seven clear days before the hearing of an application the Committee shall send to the practitioner notice in writing of the time and place fixed for a hearing.

4.—(1) Subject as hereinbefore provided, the Central Professional Committee may, if they think fit, and before hearing the practitioner or coming to a decision upon the application, refer any application to the Local Professional Committee of any area in which the practitioner resides or carries on medical practice, for consideration and report on all or any of the matters connected therewith, and may in that case forward to the Local Committee for the purpose any documents in their possession relating to the application. (2) The Local Professional Committee shall make such inquiries into the circumstances of the case as they think fit and may invite the practitioner to appear before them and to call such witnesses as he may desire, and shall as soon as may be report any facts ascertained by them and their opinion on the case confidentially in writing to the Central Professional Committee.

5.—(1) In the case of an application for a certificate of exemption other than on the ground of conscientious objection which is made by or in respect of a practitioner who is a member of the staff (including the residential and teaching staff) of any hospital or medical school situated within the Administrative County of London, or by or in respect of any other practitioner in England or Wales where the Army Council or the Central Professional Committee deem it advisable, the Central Professional Committee shall forthwith refer the application for consideration to a Committee of Reference appointed by the Royal College of Physicians of London and the Royal College of Surgeons of England and approved for this purpose by the Army Council, and in such case the recommendation shall be made by the Committee of Reference and shall be transmitted by them to the Central Professional Committee and by that Committee to the Tribunal. (2) The provisions of Article 3 (2) of these Regulations shall apply in the case of applications referred to the Committee of Reference, but, subject as aforesaid, the procedure of the Committee of Reference on the consideration of an application shall be such as the Committee of Reference may determine. (3) The Army Council may, if they think fit, and subject to such conditions as they may impose, approve for the purposes aforesaid any existing Committee of Reference recognised by them which has undertaken similar duties in connexion with the selection of practitioners for service during the war in the Naval and Military Forces of the Crown.

6.—(1) The Central Professional Committee shall elect a chairman who shall preside at all meetings of the Committee held for the purpose of dealing with matters arising under these Regulations, and if the chairman is absent from any meeting the members present shall choose one of their own number to preside, and that member shall for the time being have all the powers of the chairman. (2) The quorum of the Committee shall be such number of members, not being less than five, as the Committee may decide. (3) Proceedings of any committee under these Regulations shall not be open to the public.

7. Questions before the Central Professional Committee shall be decided by a majority of the members present and voting, and in the event of an equality of votes, the chairman shall have a second or casting vote.

8.—(1) A practitioner may appear at any hearing before the Central Professional Committee personally, or, in any case where the Committee so permit, by a representative. (2) The Committee at any

hearing may, if they think fit, hear witnesses other than the witnesses, if any, called by the practitioner, and the practitioner or his representative may put to such witnesses such questions as appear to the Committee to be relevant.

9. Notices and applications required to be delivered to the Central Professional Committee shall be sent to the office of the Committee, and may be delivered at or sent by post to that office, and notices required to be sent to a practitioner in respect of whom an application for a certificate of exemption is made may be sent by post to or delivered at his usual place of residence.

10. Subject as hereinbefore provided, the Central Professional Committee shall, so soon as they have considered an application and come to a decision thereon, communicate their recommendation in writing to the Clerk of the Tribunal by which the application has been referred; and a register of all applications and of the decisions thereon shall be kept by the Central Professional Committee.

11. The Military Service Regulations (Amendment) Order, 1916, shall not apply to an application by or in respect of a practitioner for a certificate of exemption where those Regulations are inconsistent with the provisions of these Regulations.

12. In these Regulations "practitioner" means a duly qualified medical practitioner.

A BENEVOLENT FUND FOR THE SERVICES AUXILIARY TO THE ROYAL ARMY MEDICAL CORPS.

A general meeting of officers of the auxiliary branches of the Royal Army Medical Corps was held on June 1st in the Royal Army Medical College, Grosvenor-road, S.W. About 100 officers attended. The Director-General, Sir Alfred Keogh, was in the chair, and briefly explained why the meeting had been called, and outlined the objects of the various benevolent funds connected with the regular Royal Army Medical Corps. In the course of the discussion Dr. Samuel West, treasurer of the Royal Medical Benevolent Fund, pointed out that there might be some danger of overlapping with existing institutions. It was unanimously decided by the meeting that a benevolent fund should be raised for the auxiliary branches of the Royal Army Medical Corps—i.e., Special Reserve, Temporary R.A.M.C., R.A.M.C. Territorial Force—and a Provisional Committee of eight members was appointed to inquire into the whole subject and to draw up some rules and regulations, and to report as to the feasibility of the scheme to a general meeting to be held towards the end of June. The Director-General was warmly thanked for the interest he took in the welfare of the medical services of the army, and a vote of thanks to him for presiding brought the proceedings to a close.

THE EXCHANGE OF INVALID PRISONERS.

During the last month the arrangements have been completed for the exchange of invalid prisoners between Great Britain and Germany and for their internment in Switzerland. A certain grade of incapacity or invalidity has been deemed necessary for this internment in Switzerland, a higher grade of complete incapacity entitling the prisoner to entire release and return to his own country. Although the conditions are in the main the same as those arranged between France and Germany and noted in THE LANCET of April 29th (p. 936), rather more elasticity has been allowed and the revised list is therefore repeated here.

List of Diseases, Infirmities, and Results of Wounds Considered as Rendering Prisoners of War Eligible for Internment in Switzerland.

1. Tuberculosis of the respiratory organs, even in incipient stages.
2. Tuberculosis of other organs (skin, glands, bones, joints, digestive organs, urinary system, sexual organs, &c.).
3. Chronic constitutional diseases, chronic affections of the blood, and chronic intoxications (malaria, diabetes, leucocythæmia, pernicious anæmia; poisoning by chlorine, carbon monoxide, lead, mercury, &c.).
4. Chronic affections of the respiratory system (stenosis, marked emphysema, chronic bronchitis, chronic pleurisy, &c.).
5. Chronic affections of the circulatory system (heart disease, diseases of the heart muscle, aneurysm, severe varix, arteriosclerosis, &c.).
6. Chronic affections of the digestive organs with bad nutrition, necessitating special diet of long duration.
7. Chronic affections of the urinary and sexual organs (chronic nephritis, stone, hypertrophy of prostate, &c.).
8. Chronic affections of the central and peripheral nervous system (hysteria, epilepsy, Graves disease, chronic sciatica, paralysis, and other grave nervous conditions).
9. Chronic diseases of the organs of the senses (glaucoma, inflammation of the cornea, iris, choroid, &c.; chronic middle-ear disease).
10. Blindness or the loss of one eye if the remaining eye does not possess normal vision without glasses.
11. Deafness in both ears.
12. Chronic disease of the skin of wide extent (cutaneous ulcers, fistulæ).
13. Chronic articular rheumatism and gout with visible or tangible deformity.
14. Malignant or non-malignant tumours, but with marked functional troubles.
15. Severe general debility due to age or disease.
16. Serious forms of syphilis causing functional troubles.
17. Loss of a limb in an officer or non-commissioned officer. [Privates under such conditions are exchanged.]
18. Stiffness of important joints, false joints, shortened limb, atrophy of muscle, paralysis due to gunshot wounds and likely to be of long duration.
19. All conditions resulting from disease or wounds not included in the above-mentioned categories, but causing unfitness for military service for at least one year (mutilation of face or jaw, trephining, indolent ulcers, &c.).
20. Isolated cases not included in any of the above categories whose wounds or disease are of equal severity to those in the above categories, and which in the opinion of the Commission make necessary internment in Switzerland.

The following should be excluded:—

(*a*) All serious nervous or mental affections requiring treatment in a special establishment.

(*b*) Chronic alcoholism.

(*c*) All communicable diseases within the period of their infectivity (infectious diseases, gonorrhœa, syphilis, venereal sores, trachoma).

The working out of the scheme was done by M. Hoffmann, member of the Swiss Government, and a Sanitary Commission of Swiss medical men appointed to visit the combatant countries and make the selection among the prisoners. The commission, with Lieutenant-Colonel Sturzenegger, Commandant of the 4th Sanitary Division of the Swiss army, at its head, is just now completing its work in this country and will shortly be returning. In Switzerland certain districts possessing special virtues for invalids have been selected by the Swiss army surgeons, and in each district a medical officer of high standing, with the title of Director of Internment, has been appointed. Different areas have, of course, been selected for the various nationalities. The directors have prepared suitable quarters for officers and men, and their task has been made the easier by reason of the fact that many of the best hotels are practically empty of visitors, and the proprietors are therefore doubly glad to be of service to the victims of war. The prisoners, or, as they are called in Switzerland, *internés*, are not entirely free, although allowed a large degree of liberty. No military guard is provided, the keeping of order being left entirely in the hands of the Swiss police, and that this will be an irksome supervision no one will think who has ever known a Swiss *Landjäger* well. The privates are under the command of their own non-commissioned officers who know best how to deal with them. In each village a non-commissioned officer is appointed as local chief of the *internés*, and in every hotel there is a *sous-chef*. The men live under a régime which is based on military precedent, but entirely salutary on hygienic grounds for convalescents. Those who are not disabled by wounds, or otherwise, rise at 6.30, breakfast at 7.15, do their rooms and share the general work of the house between 8 and 10, which is also the time for medical treatment. From 10 to 11.30 exercise is taken under the surveillance of a non-commissioned officer. Dinner is served from 12 to 1, after which exercise is taken in common from 1 to 5 under the orders of the physician. From 5 to 6.30 the men are free to walk about the villages. Supper is from 7 to 8, bedtime at 9, and lights out at 9.30. The freedom is complete from 5 to 6.30 within the appointed area and must be particularly grateful to men who have for long been living as prisoners of war. They may go to cafés and taverns, but in supplying alcoholic drinks the responsibility is placed on the inn-keeper who is severely dealt with in case of excess.

The diet of the men is carefully arranged so as to give a minimum of 2000 calories in carbohydrates, 450 in proteids and 500 in fat. Friday is a meatless day, meat being in Switzerland a costly item of diet. The men are weighed regularly every fortnight and the charts sent to the army surgeon for control so as to detect at once if the nutrition in some quarter is deficient. The Chief Commissioner at a complimentary dinner given by the Swiss colony in London told his audience that French and German prisoners had often gained from 6 to 10 lb. during their first few weeks of internment in the good Swiss air, but the English medical officer who accompanied the mission laughingly expressed the doubt whether it would be possible for the German prisoners about to be released from England to put on weight after their good feeding in this country.

For treatment the men are placed in charge of competent physicians whose task it is to relieve disease and the after-effects of wounds, and to make the men useful and self-supporting members of society again. Those that need special treatment are sent to health-resorts which deal with their particular condition, as Ragaz, Aigle, Bex, Schinznach, Yverdon, and Loeche. Tuberculous cases are taken in at

Leysin, Montana, Davos, and Arosa. Orthopædic institutions are provided, or are in course of preparation, and there is a large surgical hospital in Lucerne where any major surgery will be performed by first-rate operators.

There are already some 9000 Frenchmen interned in Switzerland, a large number of Belgians, more than 3000 Germans, and it is anticipated that more than 500 English invalid prisoners will be released. The British *internés* will at present be stationed at Château d'Oex, one of the most delightful subalpine spots in the Bernese Oberland, and at other villages such as G'staad in the same upland valley. Château d'Oex is more than 3000 feet above sea-level, and both as health-resort and sport centre has enjoyed some little popularity among British travellers for ten years past. There is still, even during war-time, a small English colony, and the British chaplain, Rev. E. Dudley Lampen, is chairman of the local committee which is to assist in providing comforts and luxuries for the men.

The whole system has now been tried with French and German *internés* for some three months and has worked exceedingly well. A few prisoners have tried to escape, but these were all recaptured before they left Switzerland. Nothing would be gained if they were to reach their native land, because, according to agreement, they must then be returned to Switzerland. Most of them are, of course, so gravely invalided that they would be incapable of doing military work for at least twelve months. The threat that if a man behaves badly he will be returned to his prison-camp is used as a simple and effective means of enforcing discipline, but there has been no need as yet of putting it into execution in a single case. Captain F. Schwyzer, of Kastanienbaum, Lucerne, is the officer in charge of the department of British internment; he is a Swiss medical man who has lived in America and is one of the members of the sanitary commission now in this country. Dr. Oscar Bernhard, of St. Moritz, another member of the commission, whose name will be remembered as the pioneer of the open-air and sun treatment of surgical wounds, hopes to be able to introduce insolation treatment for the unhealed wounds of war. At 3000 feet the proportion of ultra-violet rays in the light is naturally much higher than that at sea-level.

To avoid needless idleness and its results the *internés* are encouraged to work at the trades at which they are most competent, and an endeavour is made to find occupation for those who have no trade or skill. Many take up gardening, others engage in shoemaking, tailoring, and laundry-work, or act as barbers. Newspapers and books are usually furnished by some charitable society from home, and wherever there are prisoners there are small libraries springing up. Among a certain group of *internés* a voluntary worker is supplying free of charge to them any technical books required for their work, and this might well be done by some public-spirited person for those at Château d'Oex.

What has been said about restrictions applies only to private soldiers. Interned officers occupy entirely separate quarters and are practically free to move as they like. At night they are to report at their quarters unless they are living with their own family.

On Tuesday, May 30th, the first two trains arrived at Chateau d'Oex, bringing British wounded prisoners of war from German camps. The total for this day was 217 men and 30 officers. A reception had been organised to welcome the soldiers and a crowd of some 5000 witnessed the touching scene. The men are all badly wounded, many were on crutches, many had lost an arm, or a leg, or an eye. The ladies of the British Colony had organised a tea for the soldiers, and speeches of welcome were delivered by the British Minister, Mons. Favrod-Coune, the Deputy, and the Rev. E. Dudley Lampen, the British chaplain. On Wednesday, May 31st, another contingent of 140 men arrived.

We learn from Mr. Lampen that the soldiers have been put up at the various hotels and pensions under the care of the Swiss military doctors, that all are doing well in the fine mountain air, and that there are only a few hospital cases. At the end of June a third contingent of 100 men is expected at Château d'Oex, which will bring the total received in the valley to some 500 men.

ON June 6th and 7th a war fair on behalf of the funds of the Wounded Allies Relief Committee was held at the Caledonian Market, Islington. The fair took the form of a monster rummage sale, and was opened on the first day by the Lord Mayor. The City of London gave the use of the market, and the allied countries and the colonies were represented by special stalls. The attendance was good on the first day.

A NEW AMBULANCE TRAIN FOR THE NAVY.—During the coming Whitsuntide the Lords Commissioners of the Admiralty have given permission for the exhibition, at Addison-road Railway Station, Kensington, W., of a new naval ambulance train which has just been handed over to them by the London and North-Western Railway. The train will form the latest example of ambulance transport. It is 600 feet long and equipped to meet the special requirements of the Admiralty. There are 12 coaches serving as wards, where the patients are carried in cots slung as on board ship. This enables a wounded man to be transferred from the ship to the train without being taken out of his cot. A charge of 1*s.* will be made to visitors, and the proceeds will be given to the Dreadnought Hospital for Seamen, Greenwich.

BRITISH SPORTSMEN'S AMBULANCE FUND.—This Fund has been organised at the National Sporting Club. At a luncheon at the club on Monday last, presided over by Lord Lonsdale, Mr. James White explained the great need of ambulances at many points on our line and the lines of our Allies in France, and it was decided to attempt to provide a fleet of at least 100 ambulance cars at a cost approximately of £400 each car. All subscriptions should be addressed to the Honorary Treasurer of the Fund at the National Sporting Club, Covent Garden, London, W.C. They will be acknowledged in the press.

Medical News.

UNIVERSITY OF OXFORD.—The degree of Doctor of Medicine has been conferred upon John Howell Evans.

APOTHECARIES' HALL OF IRELAND.—The next professional examinations of the Apothecaries' Hall of Ireland will commence on the following dates: Primary Professional, Monday, July 3rd; Intermediate, Part 1, Monday, July 10th; Intermediate, Part 2, Monday, July 17th; Final Professional, Monday, July 24th.

CHADWICK LECTURES ON MEASLES. — At the second Chadwick lecture on Measles[1] the chairman, Sir James Crichton-Browne, said that he hoped the Compulsory Notification Order would open the eyes of the public to the seriousness of the disease. It was indeed a deadly scourge, accounting for some 11,000 deaths annually, nine-tenths of which were in the first five years of life, and in a host of cases crippling where it did not kill. The death-rate alone gave therefore a wholly inadequate picture of its devastating character. Dr. H. J. Cates opened with the dogmatic statement that notification would prove to be the keystone of the arch of any administrative system of control of measles. He dealt with the objections which had been raised to notification, and with regard to the cost he estimated the value of a saved life to the community at £200 to £300, a sum which would pay for some 4000 notifications at the "war price" He called attention to the gratifying fact that in Birmingham already parents are now notifying almost as many cases as doctors. The remainder of the lecture was occupied with a discussion of various administrative measures for dealing with the disease. The lecturer was entirely in agreement with the late Sir Richard Thorne Thorne, who 20 years ago saw the necessity of combining all such measures if any effective control was to be obtained. Each suspected case must be followed up (1) promptly; (2) by a woman who is a trained nurse of experience or by an instructed health visitor; and (3), most important of all, by one in possession of local knowledge. In case of an extensive epidemic with which the permanent staff was insufficient to deal, temporary workers should be taken on to relieve the staff in their other work and not to visit the measles cases. Finally, continuous revisitation was essential, and it was in this point that some otherwise well-laid schemes had failed. The instructions for home nursing might be left to the various local associations to formulate their own rules, but a useful model had already been drawn up by the Central Council for District Nursing in London.[2]

[1] The first lecture was noticed in THE LANCET of June 3rd, 1916, p. 1151.

[2] The rules summarised in THE LANCET of March 4th, 1916, p. 525.

Hospital accommodation must be provided at any cost for those cases too ill to be nursed at home or housed in unsuitable surroundings. For such cases even in hospital a high mortality must be faced. In the St. Helens epidemic it had approached 18 per cent., and the experience of the Metropolitan Asylums Board was to the same effect. In regard to the control of contacts, adults might be left out of consideration. Dr. William Butler's figures for Willesden had shown that 97 per cent. of children over 15 years of age had already had measles and were therefore practically immune. Of school measures the attempt in recent years to control infection by closing the school on the ninth day after an infected child had been introduced for a period of five or six days, during which an incubating child would presumably sicken at home, had been favourably reported upon. It must, however, never be forgotten that the control of measles was not primarily a school attendance question, because the cases were principally below school age.

PUBLIC HEALTH IN ABERDEEN: REPORT OF MEDICAL OFFICER OF HEALTH.—Dr. Matthew Hay, the medical officer of health of the city of Aberdeen, has issued his report for 1914, and also abbreviated reports for 1915 by the medical officer of health and the sanitary officer. Referring to the popular belief that during or after great wars the proportion of males to females born increases, the report says that the proportion of boys to girls born in 1915 was 100·5 to 100. Only in one year since 1907 were fewer boy babies born in Aberdeen. As to the outcry about "war babies," in Aberdeen, a garrison town, the proportion of illegitimate births in 1914 was 9·4 per cent. of the total number of births, which was lower than any year since 1908. In 1915 the percentage was 10·0 of the total births. In fact, illegitimacy has decreased since war began. In 1915 the percentage of marriages was equal to 11·3 per 1000 of the population, by far the largest rate ever recorded in the city since registration began. Irregular (so-called) marriages have greatly increased in number, undoubtedly owing to the war. During 1915 the death-rate was equivalent to 18·6 per 1000. This is the highest death-rate in any year since 1900. The average age at death was 36·3 years, as against an average of 37·9 for the preceding ten years. The excessive mortality during 1915 was mainly due to a considerable increase in deaths from lung diseases (pneumonia and bronchitis), from measles and whooping-cough, from diseases of the digestive system, and from atrophy and debility. The recorded death-rate from cancer and other malignant diseases was the highest since the commencement of civil registration. The death-rate from pneumonia was 128 per 100,000. This is also the highest recorded rate with the exception of the year 1902, when the rate was 134 per 100,000. Scarlet fever was more prevalent than in any year since the commencement of notification in 1881. The case mortality was 7·7 per cent., or nearly three times the average for the three preceding years. Scarlet fever may be said to have been continuously epidemic in Aberdeen since 1908, with the exception of a small recession in 1910. There were 675 notifications of diphtheria in 1915, as against 1627 in 1914 and 2062 in 1913. The case mortality was 7·5 per cent., slightly above the average for the preceding ten years. Dr. Hay alludes to the suggestion that the extensive use of gas-cookers for heating apparatus in houses, especially where no provision was made for carrying the fumes of the burned gas into a chimney, might have some connexion with the excessive prevalence of diphtheria in the last three years. But he says that his inquiries proved that the proportion of households with gas-cookers was exactly the same for diphtheria and scarlet fever, and that this fact would seem to point to the conclusion that gas-cookers had no predisposing effect for diphtheria, unless it were assumed that the effect existed, brt was equally strong for both diseases. This, he thinks, is not likely to be the case. The suggested predisposing effect was merely the possible effect of the combustion products of gas, and also of the undue heating of the atmosphere, in rendering the throat more susceptible to diphtheria infection. Against the suggestion there is also the fact that gas-cookers are probably as extensively used in many other large towns as in Aberdeen, and yet in many of these towns there has been no unusual increase in diphtheria such as Aberdeen has experienced. There were 19 cases of epidemic cerebro-spinal meningitis reported, 14 of which ended fatally. The cases included 6 soldiers and 1 officer, all of whom except one died.

EMIGRATION FROM IRELAND.—During 1915 the number of persons who left Ireland was the lowest recorded since 1851, when the collection of emigration returns began. The total number of emigrants in 1915—6671 males and 4121 females—was 10,792, being 2·4 per 1000 of the estimated population. It appears that 83·6 per cent. of the persons who left Ireland in 1915 were between the ages of 15 and 35, as compared with 86·6 in 1914. The United States was the destination of 6681 emigrants in 1915.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

The Whitsun Recess.

PARLIAMENT has risen for the Whitsun recess. The House of Commons resumes on Tuesday, June 20th. So long as the war continues it seems unlikely that Parliament will take a continuously extended holiday.

The Supply of Petrol.

A preliminary report has been made by the committee appointed by the Board of Trade to control the supply and distribution of petrol. It indicates directions in which the use of petrol for pleasure purposes may be restricted. It is hoped that the detailed recommendations will soon be available. The Board of Trade anticipates that action will then immediately be taken.

HOUSE OF COMMONS.

WEDNESDAY, MAY 31ST.

Artificial Limbs for Soldiers and Sailors.

Mr. BARNES asked the Secretary to the Admiralty whether, although injury pensions were granted to soldiers and sailors who had lost a limb, or limbs, in the defence of their country, they were dependent upon charity for the supply of the necessary artificial limbs.—Mr. MACNAMARA replied: All artificial limbs for soldiers and sailors rendered necessary by injuries received on service are supplied in the first place and subsequently repairs carried out or replacement when necessary made at the expense of the Admiralty, War Office, or Greenwich Hospital funds. The particular class of limb fitted is decided on by skilled orthopædic surgeons, bearing in mind the man's probable future employment. No sailors or soldiers are dependent on charity for such appliances.

British Red Cross Units in Italy.

Mr. ELLIS GRIFFITH asked the Under Secretary for War how many British subjects of military age were engaged in the British Red Cross units in Italy; and what authority granted them exemption from military service.—Mr. TENNANT answered: There is at present no complete returns of the numbers employed in British Red Cross units in Italy in possession of the Army Council. There is no rule excepting these men from military service, but those who are classified in medical categories which are not being called up are not interfered with.

Chief Medical Officers in Dardanelles and Mesopotamia.

Mr. SHIRLEY BENN asked the Under Secretary for War whether he would give the name of the chief medical officer with the Expeditionary Force at the Dardanelles, and also the name of the medical officer who had the responsibility in regard to medical provision for the expedition to Mesopotamia.—Mr. TENNANT said, in reply: The Director of Medical Services of the Expeditionary Force at the Dardanelles was, first, Surgeon-General Birrell, and later, Surgeon-General Bedford. The arrangements for the Mesopotamian Expedition were made by the Government of India, and Surgeon-General Hathaway was the Director of Medical Services of the Force. Surgeon-General Sir W. Babtie was Director of Medical Services in India at the time.

The National Insurance Act.

Mr. CURRIE asked the representative of the National Insurance Commissioners whether, in view of the emphasis laid by the report of the investigation committee upon the facts that when the Insurance Act was passed the prospect was held out to insurers that they would receive a direct benefit from the wisdom of their choice of a society, and that, in view of the committee, the insurance scheme as a whole cannot possibly be said to satisfy the usual requirements of a flat-rate system, it was intended to introduce further legislation.—Mr. CHARLES ROBERTS wrote in reply: The interim report of the Departmental Committee is now under consideration by the Treasury.

THURSDAY, JUNE 1ST.

Prisoners of War in Germany.

Major HUNT asked the Secretary for Foreign Affairs whether his attention had been called to the statements of totally disabled British soldiers just returned from Germany to the effect that the food was so bad that rats would not eat it, and that British soldiers with wounds still unhealed were compelled to dig trenches.—Sir EDWARD GREY replied: The Government Committee on the Treatment by the Enemy of Prisoners of War will, no doubt, shortly take the evidence of the disabled British soldiers recently returned from Germany and the evidence will receive our careful consideration.

The Production of Optical Glass.

Major CHAPPLE asked the Minister of Munitions, whether, before committing himself to any encouragement to the

establishment of an imperial school of technical optics and the costly overlapping it might involve, he would cause inquiry to be made into the accommodation and facilities for experimental and research work on optical glass and on lens problems at the Imperial College of Science and Technology, South Kensington.—Colonel LEE (Parliamentary Secretary (Military) to the Ministry of Munitions) replied: The Minister of Munitions is fully alive to the importance of dealing with the matter by a comprehensive scheme such as he understands is favoured by the Board of Education and the London County Council, which would include both the Imperial College and the Northampton Institute and would obviate anything like overlapping or competition.

Sterilisation of Hypodermic Needles.

Major GUINNESS asked the Under Secretary for War whether he was aware that when inoculating troops against typhoid and cholera certain officers of the Royal Army Medical Corps did not sterilise their hypodermic needles between individual inoculations, relying solely on the sterilisation of the skin, which incurred the risk of local or general septic infection; whether he was aware that there was an objection on the part of troops to be inoculated under such conditions; and whether he would issue a general order to all medical officers concerned in the Expeditionary as well as the Home forces defining the sterilisation methods which ought to be adopted.—Mr. TENNANT wrote in reply: I am not aware that certain officers of the Royal Army Medical Corps do not sterilise their hypodermic needles between individual inoculations. Instructions have been and are now issued with all consignments of antityphoid vaccine emphasising the importance of sterilising the needle after each injection. This is understood to be a routine practice with all injections. If there is evidence that these instructions are in some instances not being followed all commands will be informed.

Soldiers' Leave and Small-pox Outbreaks.

Mr. CROOKS asked the Under Secretary for War whether an Army Order had been issued which would have the effect of curtailing soldiers' leave on account of small-pox outbreaks in the counties of Lancashire, Northumberland, Durham, Glamorganshire, and Monmouthshire; and whether, seeing that the vast majority of the soldiers had been recently vaccinated, such an order was considered necessary.—Mr. TENNANT (in a written answer) replied: Orders were issued with reference to the counties mentioned, but have now been withdrawn, except in the case of three towns where cases of small-pox have recently occurred. Restrictions will not be enforced in regard to men who have been recently successfully vaccinated.

Dental Benefit under the National Insurance Act.

Mr. RAFFAN asked the representative of the National Insurance Commissioners whether it was within the competence of any approved society under the National Insurance Act to expend any portion of its funds upon the provision of dental benefits for its members with or without the approval of the National Insurance Commissioners.—Mr. CHARLES ROBERTS answered: In accordance with Section 37 of the Act of 1911 the additional benefits specified in Part II. of the Fourth Schedule to the Act can only be provided in a society whose funds show a surplus on valuation. The commissioners are, however, advised that it is within the competence of a society to make subscriptions or donations under Section 21 of the Act to a charitable institution having amongst its objects the provision of dental treatment which is available for the members of the society.

Mr. RAFFAN: Am I to understand that the society cannot directly give this benefit out of its own funds?—Mr. ROBERTS: It can make a subscription to the charitable societies for the purpose.

Mr. RAFFAN: My question is whether the society cannot directly give benefits out of its own funds?—Mr. ROBERTS: I think in that case it could only give the benefit after a valuation and as the result of a declaration.

Bleached Flour.

Mr. HASLAM asked the President of the Local Government Board whether the sale of flour bleached by chemical process was forbidden within the United States; whether the sale of such flour was still permitted in the United Kingdom; whether any such flour was imported from the United States; and, if so, would he state the quantity imported from that source during the last recorded year.—Mr. LONG wrote in reply: There is no law specifically prohibiting the sale in the United Kingdom of flour bleached by artificial means, but I understand that a decree pronouncing flour so treated to be adulterated has been made in the United States. The sale in this country of flour or other food materials is subject to the control provided by Sections 3 and 6 of the Sale of Food and Drugs Act, 1875. The laws of the United States do not prohibit the export of bleached flour to this country, and there is no information as to what proportion of the flour coming to the United Kingdom from the United States is artificially bleached.

Health Visitors in Metropolitan Boroughs.

Mr. KING asked the President of the Local Government Board whether he would state the number of health visitors in the following metropolitan boroughs respectively: Camberwell, Islington, Southwark, Bermondsey, Bethnal Green, Shoreditch, and Poplar; how many health visitors were required in each of these boroughs to meet the needs of the infant population according to the recognised demand of the Board; and, in cases where the numbers were inadequate, what action he proposed to take.—Mr. LONG wrote in reply: The number of health visitors in the boroughs referred to according to the information in my possession is given in the following table:—

Metropolitan borough.	Number of births in 1915.	Number of health visitors appointed by Boro' Council.	Number of health visitors appointed by voluntary agencies.
Bermondsey ...	3547	2	2 paid and some unpaid visitors.
Bethnal Green	3514	2	None.
Camberwell ...	6149	None.	One.
Islington... ...	7544	None.	3 paid visitors who give their whole time, and 1 who gives half time.
Poplar	4742	2 (1 vacancy).	14 paid visitors who give their whole time, 1 who gives part time, and some unpaid visitors.
Shoreditch ...	3114	2	3 paid visitors who give their whole time, and 1 who gives 4 days a week.
Southwark ...	5239	1	3 paid and some unpaid visitors.

In a memorandum which I have issued it is stated that roughly one health visitor is required for each 500 births. The proportion varies with the social and other conditions of the area. In cases in which the health visiting staff is considered insufficient for the needs of the district my department urge the local authority to appoint more health visitors. They are still in correspondence with some of the borough councils in the above list on this subject. Nearly all the metropolitan boroughs have been visited by my inspectors and action urged.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).
When the application of a Belgian medical man would be considered the advertisers are requested to communicate with the Editor.

BOURNEMOUTH, ROYAL VICTORIA AND WEST HANTS HOSPITAL.—House Surgeon, unmarried, for six months. Salary £150 per annum and extras, with board, &c.

BRADFORD, CITY OF.—Two Temporary Female Medical Officers. Salary 8 guineas per week.

BRIGHTON COUNTY BOROUGH ASYLUM, Haywards Heath.—Locum Tenens Assistant Resident Medical Officer for five weeks. Salary £6 6s. per week, &c.

BURY INFIRMARY.—Junior House Surgeon. Salary £150 per annum, with board, &c.

DARLINGTON HOSPITAL AND DISPENSARY.—House Surgeon. Salary £160 to £200 per annum, with board, &c.

DUBLIN UNIVERSITY, TRINITY COLLEGE SCHOOL OF PHYSIC.—Chair of Surgery.

DUDLEY, GUEST HOSPITAL.—Senior Resident Medical Officer. Salary £150 per annum, with board, &c.

GRAVESEND HOSPITAL.—Female House Surgeon. Salary at rate of £200 per annum, with board, &c.

GREAT YARMOUTH HOSPITAL.—House Surgeon, unmarried. Salary £200 per annum, with board, &c.

HAMPSTEAD GENERAL HOSPITAL, Haverstock-hill, N.W.—Resident House Physician for six months. Salary £200 per annum, with usual allowances.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton.—Assistant Resident Medical Officer. Salary £100 per annum, with board, &c.

HUDDERSFIELD COUNTY BOROUGH.—Assistant Medical Officer of Health. Salary as arranged.

HUDDERSFIELD ROYAL INFIRMARY.—Senior House Surgeon and Assistant House Surgeon. Salaries £150 and £100 per annum, with board, &c

KING EDWARD VII.'S HOSPITAL FOR OFFICERS.—Resident Medical Officer.

LEAMINGTON SPA, WARNEFORD GENERAL HOSPITAL.—Two Resident Medical Officers. Salary £250 and £150 per annum, with board, &c.

LEEDS GENERAL INFIRMARY.—Resident Aural Officer. Salary £100 per annum. Also Resident Obstetric Officer. Salary £50 per annum. Also Resident Medical Officer at Ida and Robert Arthington Hospitals. Salary £80 per annum, all with board, &c.

LONDON TEMPERANCE HOSPITAL, Hampstead-road, N.W.—Assistant Resident Medical Officer for six months. Salary at rate of £120 per annum, with board, &c.

MANCHESTER NORTHERN HOSPITAL FOR WOMEN AND CHILDREN, Parkplace, Cheetham Hill-road.—Female House Surgeon. Salary £120 per annum, with board, &c.

METROPOLITAN HOSPITAL, Kingsland-road, N.E.—Surgeon for Diseases of Women.

NEW HOSPITAL FOR WOMEN, Euston-road, N.W.—Two Female House Surgeons and One Female House Physician for six months. Salaries £50 per annum, with board, &c. Also Female Senior Clinical Assistant to Out-patient Department: also as Anæsthetist. Salary £10 10s. per annum. Also Clinical Assistants to Out-patient Department, Wednesday and Saturday afternoon.

OXFORD EYE HOSPITAL.—House Surgeon. Salary £100 per annum, with board, &c.

PRESTON, LANCS, COUNTY ASYLUM, Whittingham.—Assistant Medical Officer. Salary £250 per annum first year, £300 second, with board, &c. Also Locum Tenens. Salary £7 7s., with board, &c.

PRESTON ROYAL INFIRMARY.—Resident Medical and Surgical Officer. Salary as arranged.

QUEEN'S HOSPITAL FOR CHILDREN, Hackney-road, Bethnal Green, E.—House Surgeons for six months. Salary £100 per annum, with board, &c.

ST. MARK'S HOSPITAL FOR CANCER, FISTULA, AND OTHER DISEASES OF THE RECTUM, City-road, E.C.—House Surgeon. Salary £150 per annum, with board, &c.

SHEFFIELD ROYAL INFIRMARY.—House Physician. Salary £120 per annum, with board, &c.

SUFFOLK, BECCLES, 1ST MOUNTED BRIGADE FIELD AMBULANCE.—Two Medical Officers. 2/2ND LOVAT SCOUTS: Regimental Medical Officer.

SUNDERLAND, COUNTY BOROUGH.—Temporary Tuberculosis Medical Officer. Salary £500 per annum.

WEST RIDING OF YORKSHIRE, MIDDLETON-IN-WHARFEDALE SANATORIUM, near Ilkley.—Female Assistant Medical Officer. Salary £300 per annum.

THE Secretary of State for the Home Department gives notice of a vacancy for a Medical Referee under the Workmen's Compensation Act, for County Court Circuit No. 50, attached more particularly to the Brighton, Lewes, Arundel, Chichester, Worthing, and Haywards Heath County Courts. Applications should reach the Private Secretary, Home Office, not later than July 1st next.

THE Chief Inspector of Factories, Home Office, London, S.W., gives notice of a vacancy for a Certifying Surgeon under the Factory and Workshop Acts at Gainsborough, Lincolnshire.

Births, Marriages, and Deaths.

BIRTHS.

BARKLEY.—On May 14th, at Sandy-lane, Cheam, Surrey, the wife of Lieutenant-Colonel J. Barkley, R.A.M.C., of a daughter.

MACKENZIE.—On June 2nd, at Rose Hill, Dorking, the wife of S. Morton Mackenzie, M.B., of a son.

WOOLF.—On June 5th, at Wimpole-street, W., the wife of Captain A. E. Mortimer Woolf, F.R.C.S., R.A.M.C., of a daughter.

MARRIAGES.

HODGE—SYMES.—On May 30th, at Crediton Church, Captain W. Lang Hodge, R.A.M.C., to Marian Hilda Symes, of Manor House, Crediton.

PHILLIPPS—STEWART.—On May 2nd, at St. Ninian's Episcopal Church, Glasgow, Captain Richard Biddulph Phillipps, R.A.M.C., to Katherine Jane, youngest daughter of the late Captain James Stewart, 16th Lancers, and Mrs. Stewart, of Williamwood, Cathcart, Renfrewshire.

SANER—DENOUX.—On May 31st, at Brompton Oratory, S.W., John Godfrey Saner, M.C. Cantab., F.R.C.S. Eng., to Fernande Gabrielle, daughter of the late Monsieur Denoux and of Madame Denoux.

STOPFORD-TAYLOR—BUCKLEY.—On June 1st, at St. Nicholas' Church, Blundellsands, by the Rev. Dr. Guest, M.A., Major R. Stopford-Taylor, R.A.M.C. (T.F.), to Marion Gertrude, only daughter of William Buckley, J.P., of Salisbury House, Blundellsands, Liverpool.

STRADLING—KELLY.—On June 1st, at Corpus Christi Church, Wokingham, Frank Bedford Stradling, L.D.S., to Aileen, third daughter of Mr. and Mrs. Patrick Kelly, of Limerick.

WYATT—BRIGGS.—On May 31st, at St. James's Piccadilly, H. D. Wyatt, M.D., of Green Lanes, Godalming, to Gertrude May Briggs, widow of Charles Briggs, of Norwood.

DEATHS.

AUSTIN.—On June 5th, at Moorfield-road, West Didsbury, Manchester, Elfred Chalmers Austin, Captain, R.A.M.C., in his 40th year.

CENTER.—On April 28th, at the Royal Naval Hospital, Bighi, Malta, William Rudolf Center, M.B., Fleet Surgeon, Royal Navy, of wounds received on April 27th, when H.M.S. *Russell* was sunk in the Mediterranean.

ELLIMAN.—On June 3rd, at Bella Vista, San Remo, Italy, Arthur Charles Elliman, M.R.C.S., L.R.C.P., aged 50 years.

FITZGERALD.—On May 27th, Charles Edward Fitzgerald, M.D., Honorary Surgeon Oculist to His Majesty in Ireland.

WILKINSON.—On June 5th, at his residence, Twickenham, John Sebastian Wilkinson, F.R.C.S., in his 81st year.

N.B.—A fee of 5s. is charged for the Insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

VITAL STATISTICS OF NYASALAND.

A REPORT on the Blue-book of the Nyasaland Protectorate for the year 1914–15, prepared by Mr. A. M. D. Turnbull, Assistant Chief Secretary, has been received at the Colonial Office and presented to Parliament. From this it appears that the number of Europeans resident in the Protectorate, comprising officials and non-officials, was 831 (587 males and 244 females), and the Asiatic population numbered 410. The native population is estimated to consist of 486,908 males and 602,390 females. There were 32 European births and 12 deaths during the year, showing a birth-rate of 38·38 and a death-rate of 14·44 per 1000. The health of the European officials was not so satisfactory as in the previous year, but the general health of the Protectorate was good, and there was no outbreak of disease in epidemic form. Thirty-nine cases of sleeping sickness were reported, as compared with 64, 46, and 38, respectively in the three preceding years, but, owing to the partial suspension of investigations and the illness of one of the medical officers, it would be misleading to base upon these figures any conclusions as to the progress or otherwise of the disease. The total number of cases which had been discovered in the Protectorate up to the end of 1914 was 211. Of the cases diagnosed in the year under review, 25 were males and 14 females, the proportion of approximately 2 males to 1 female continuing to be noticeable. Death has supervened as a rule in from three to five months from the probable date of infection, all the cases having proved fatal. Of diseases of the infective group, malaria was again the most prevalent, the others in order of frequency being dysentery, syphilis, gonorrhœa, pneumonia, chicken-pox, whooping-cough, and yaws. Under the head of general diseases, rheumatism in its various forms accounted for practically all the admissions. Injuries and ulcers furnished, as usual, a large proportion of the cases treated; and next in order of frequency were digestive and bowel complaints, bronchitis, conjunctivitis, and diseases of the connective tissue.

"CHINESE TOE-ROT."

A CASE described by a correspondent (R. G.) as "Chinese toe-rot," in which for several years the skin between adjacent toes hypertrophied and peeled off, leaving a tender, raw, and itching surface, is probably an example of the condition described many years ago by Mr. James Cantlie as "foot-tetter," and referred to under this name in the "Manual of Tropical Medicine" of Castellani and Chalmers. In foot-tetter the condition of the toes is but a part of a more general affection. The soles and sides of the feet become involved, and the condition may spread to the hands, the perineum, umbilicus, and occasionally to the armpits. By its persistence and constant annoyance it is calculated to cause nervous depression. Mr. Cantlie found in all the parts involved a diplococcus which was readily cultivated, and when inoculated into his own forearm caused a local condition similar to that met with at the original site of infection. The infection is very persistent, lasting in some instances 20 years after leaving the tropics. Fading to insignificant proportions in winter, it tends to return each year during the hot weather. Treatment consists in frequent washing in hot water, followed by scrupulously careful drying. Blisters are pricked and any loose skin removed. Lotio calcis sulphuratæ is very lightly mopped twice daily on the affected spots and allowed to dry, the inside of the socks freely dusted with equal parts of sulphur and boric powder, and the same powder applied to every part of the interior of the shoe. This treatment must be continued for some time and the shoes treated for a couple of months after disappearance of the symptoms. As the infection is doubtless kept up by the presence of the organisms in the shoes themselves, further methods of disinfection may be required for these, or, preferably, their destruction.

WANTED: A SKELETON.

To the Editor of THE LANCET.

SIR,—Will any reader of your journal be kind enough to lend a skeleton for the purpose of teaching first-aid to some senior cadets. It would be taken great care of and returned when done with by

Yours faithfully,

22, Newton-road, W., June 5th, 1916. P. POPE, M.R.C.S.

HENRY LAWRENCE'S "TREATISE ON HERNIA, 1807."

THE Secretary of the Royal Society of Medicine writes to say that the library copy of Henry Lawrence's "Treatise on Hernia, 1807," has been destroyed by mice, and that he would be very grateful to any reader who would put him in the way of finding a sound copy.

REPORT OF THE SCHOOL MEDICAL OFFICER FOR BIRMINGHAM: AN EXPLANATION.

IN the notice of the report of the school medical officer for Birmingham in our issue of May 20th, p. 1055, an apparent discrepancy was alluded to in reference to the number of children treated for defective teeth. It should be mentioned that the larger figure referred to (17,301) indicates the number of *attendances*, not the number of individual cases.

G. P.—The following books are suitable for the purpose:—"A Manual of Surgery." By William Rose, F.R.C.S., and Albert Carless, M.S. Ninth edition. London: Baillière, Tindall, and Cox. 1911. Price 21*s*. "A Text-book of Surgery." By Richard Warren, M.D., M.Ch. Oxon., F.R.C.S. Eng. In two vols. London: J. and A. Churchill. 1915. Price 25*s*. net. "A Manual of Surgery." By Alexis Thomson, M.D., F.R.C.S. Edin., and Alexander Miles, M.D., F.R.C.S. Edin. In three vols. Fifth edition. London: Henry Frowde and Hodder and Stoughton. 1915. Price 10*s*. 6*d*. net per volume. "The Practice of Surgery." By Russell Howard, M.S., F.R.C.S. London: Edward Arnold. 1914. Price 21*s*. "The Practice of Surgery." By W. G. Spencer, M.S., F.R.C.S., and G. E. Gask, F.R.C.S. London: J. and A. Churchill. 1910. Price 25*s*. net.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

BOOKS, ETC., RECEIVED.

BLANCHARD COMPANY, Pittsburg, Pa.
The Tonsil and Its Uses. By Richard B. Faulkner, M.D. (Columbia University). Price $1.00.

CHAPMAN AND HALL, London. JOHN WILEY, New York.
Microscopy of Vegetable Foods. By A. L. Winton, Ph.D., and others. Second edition. Price 27*s*. 6*d*. net.
Sewerage Designing, Construction, and Maintenance of Sewerage Systems. By A. Prescott Folwell. Seventh edition, revised and enlarged. Price 12*s*. 6*d*. net.

FANNIN AND CO., Grafton-street, Dublin. SIMPKIN AND MARSHALL, London. JAMES THIN, Edinburgh.
History of the Royal College of Surgeons in Ireland and of the Irish Schools of Medicine, including a Medical Bibliography and a Medical Biography. By Sir Charles A. Cameron, C.B., Honorary Secretary and Past President. Second edition, revised and enlarged.

GRIFFIN, CHARLES, AND CO., London.
Introduction to the Theory of Statistics. By G. U. Yule, M.A., University Lecturer in Statistics, Cambridge. Third edition, revised. Price 10*s*. 6*d*. net.

LEWIS, H. K., London.
Mentally Deficient Children, their Treatment and Training. By G. E. Shuttleworth, B.A., M.D., and W. A. Potts, M.A., M.D. Fourth edition. Price 7*s*. 6*d*. net.
Localisation by X Rays and Stereoscope. By Sir James Mackenzie Davidson, M.B., C.M. Aberd. Price 7*s*. 6*d*. net.

LONGMANS, GREEN AND CO., London.
Authentic Dreams of Peter Blobbs, M.D. Price 1*s*. net.

LUND, PERCY, HUMPHRIES AND CO., Bradford and London.
Surgical Bandages and Dressings. Diagrams by Alice Scott. Price 1*s*. net.

METHUEN AND CO., London.
The Drink Problem of To-day. Edited by T. N. Kelynack, M.D. Price 7*s*. 6*d*. net.
Care of the Teeth. By Arthur Pitts, M.R.C.S., L.R.C.P., L.D.S. Price 1*s*. net.
Prevention of the Common Cold. By O. K. Williamson, M.A., M.D. Price 1*s*. net.

PALMER, CECIL, AND HAYWARD, Oakley House, Bloomsbury-street, London
That Life is the Origin and Purpose of the Universe. By T. G. Palmer Hallett, M.A. Price 3*s*. 6*d*. net.

PRUDENTIAL PRESS, Newark, New Jersey.
Mortality from Cancer Throughout the World. By F. L. Hoffman, LL.D., F.S.S., F.A.S.A.

SCIENTIFIC PRESS, LIMITED, London.
Home Nursing. By Edith Newsome, M.R.B.N.A. Price 2*s*. 6*d*. net.

SMITH, ELDER, AND CO., London.
More Minor Horrors. By A. E. Shipley, Sc.D., F.R.S. Price 1*s*. 6*d*. net.

TARAPOREVALA, D. B., SONS AND CO., Bombay.
The Milk Problem in Indian Cities, with Special Reference to Bombay. By L. L. Joshi, B.Sc., M.D. With a Foreword by J. A. Turner, C.I.E., M.D., D.P.H.

VIVES, J., Muntaner 22, Barcelona.
Tratado de Pediatria. By Dr. Andres Martinez Vargas. Vol. I.

The following magazines, journals, &c., have been received:—British Dental Journal, New Zealand Medical Journal, Interstate Medical Journal, Journal of the Royal Sanitary Institute, Man, Canadian Practitioner and Review, American Journal of Public Health, Canadian Journal of Medicine and Surgery, Medical Clinics of Chicago, American Journal of Obstetrics, British Journal of Children's Diseases, Revue de Médecine, Therapeutic Gazette, Medico-Legal Journal, Revue de Chirurgie, Saint Paul Medical Journal, Archives of Internal Medicine, Pacific Medical Journal, Journal of Mental Science, Journal of Bacteriology, Cleveland Medical Journal, Royal Prince Alfred Hospital Gazette, &c..

Medical Diary for the ensuing Week.

SOCIETIES.

SOCIETY OF TROPICAL MEDICINE AND HYGIENE, 11, Chandos-street, Cavendish-square, W.

FRIDAY.—5.30 P.M., Annual General Meeting. Mr. J. Cantlie: Topography of the Liver in Relation to Liver Abscess.—Dr. G. C. Low: An Interesting Case of Syphilitic Pyrexia in an Indian Native. The Value of a Positive Wassermann Reaction in Diagnosis.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, road, W.

MONDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye. Dr. Simson: Diseases of Women.
TUESDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.
WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations. Dr. Simson: Diseases of Women.
THURSDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye.
FRIDAY.—10 A.M., Dr. Simson: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.
SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Eye Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY.—Clinics:—10.30 A.M., Surgical Out-patients (Mr. H. Gillespie). 2.30 P.M., Medical Out-patients (Dr. T. R. Whipham): Gynæcological Out-patients (Dr. Banister). 3 P.M., Medical In-patients (Dr. R. M. Leslie).
TUESDAY.—2.30 P.M., Surgical Operations (Mr. Carson). Clinics:—Medical Out-patients (Dr. A. G. Auld); Surgical Out-patients (Mr. Howell Evans); Nose, Throat, and Ear Out-patients (Mr. C. H. Hayton). Radiography (Dr. Metcalfe). 3.30 P.M., Medical In-patients (Dr. A. J. Whiting).
WEDNESDAY.—Clinics:—2.30 P.M., Throat Operations (Mr. C. H. Hayton). Children Out-patients (Dr. T. R. Whipham); Eye Out-patients (Mr. R. P. Brooks); Skin Out-patients (Dr. H. W. Barber). 5.30 P.M., Eye Operations (Mr. R. P. Brooks).
THURSDAY.—2.30 P.M., Gynæcological Operations (Dr. A. E. Giles). Clinics:—Medical Out-patients (Dr. A. J. Whiting); Surgical Out-patients (Mr. Carson); Radiography (Dr. Metcalfe). 3 P.M., Medical In-patients (Dr. R. M. Leslie). 4.30 P.M., Special Demonstration:—Dr. A. J. Whiting: Selected Medical Cases.
FRIDAY.—2.30 P.M., Surgical Operations (Mr. Howell Evans). Clinics:—Medical Out-patients (Dr. A. G. Auld); Surgical Out-patients (Mr. H. Gillespie); Eye Out-patients (Mr. R. P. Brooks).

THE THROAT HOSPITAL, Golden-square, W.

MONDAY.—5.15 P.M., Special Demonstration of Selected Cases.
THURSDAY.—5.15 P.M., Clinical Lecture.

CHADWICK PUBLIC LECTURES, Town Hall, Ilford, E.

Course of Three Lectures on the Prevention of Disease and Frostbite in the Army.
FRIDAY.—8 P.M., Lecture II.:—Professor S. Delépine: Experiments on Frigorism (illustrated by diagrams and lantern slides).

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IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITOR," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention should be given to this notice.

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MANAGER'S NOTICES.

THE INDEX AND TITLE-PAGE TO THE LANCET.

January to June, 1916.

IN view of the Government restrictions upon the supply of paper, and the shortage of paper quite apart from these restrictions, we cannot include, as usual, in all the copies of THE LANCET the Index and the Title-page which are due at the end of this month. The Index and Title-page will, of course, be prepared, and copies will be supplied gratis to subscribers on application to the Manager, THE LANCET Office, 423, Strand, London, W.C. Such application should please be sent in at once.

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METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, June 7th, 1916.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
June 1	30·060	S.W.	...	101	64	54	54	58	Cloudy
,, 2	30·000	W.	...	125	66	50	51	57	Cloudy
,, 3	29·980	N.W.	...	119	61	47	48	53	Cloudy
,, 4	29·760	S.W.	0·33	106	61	46	50	56	Cloudy
,, 5	29·320	S.W.	0·19	117	61	51	50	55	Cloudy
,, 6	29·888	W.	0·05	114	60	49	50	53	Cloudy
,, 7	29·650	W.	...	113	57	45	49	54	Cloudy

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Memorandum

ON THE

TREATMENT OF INFECTED WOUNDS BY PHYSIOLOGICAL METHODS.

(DRAINAGE OF INFECTED TISSUES BY HYPERTONIC SALT SOLUTION, AND UTILISATION OF THE ANTIBACTERIAL POWERS OF THE BLOOD FLUIDS AND WHITE BLOOD CORPUSCLES.)

BY COLONEL SIR ALMROTH E. WRIGHT, C.B., M.D. DUB., F.R.S.,

DIRECTOR OF BACTERIOLOGICAL RESEARCH, MEDICAL RESEARCH COMMITTEE; A CONSULTANT PHYSICIAN TO THE EXPEDITIONARY FORCE IN FRANCE.

1. INTRODUCTORY.

THE treatment of septic war wounds divides itself naturally into three therapeutic procedures:—

(1) In the *first* we have a number of different aims to pursue concurrently: we have to promote the destruction of the microbes which have been carried into the deeper tissues; we have to re-establish normal conditions in those tissues, resolving the infiltration in the walls of the wound, and getting rid of the infected sloughs; and we have to prevent "the corruption of the discharges," and inhibit microbic growth in the cavity of the wound.

Further, during the whole period occupied by these operations we have to be constantly on our guard to prevent active and passive movements which would propel bacteria along the lymphatics and carry poisonous bacterial products into the blood.

(2) When the microbes in the deeper tissues have been exterminated and physiological conditions have been restored, and the wound has been rendered to naked-eye inspection perfectly clean, the difficult portion of our task has been accomplished, and the time has come for dealing with the surface infection.

(3) As soon as this has been suppressed, or all but suppressed, all our thought ought to be given to promoting the processes of repair, bringing together the tissues, and covering over the denuded surfaces.

2. INADEQUACY OF THE TRADITIONAL METHOD OF TREATING WOUNDS BY ANTISEPTIC APPLICATIONS, INCISION, AND MECHANICAL DRAINAGE.

Inefficacy of antiseptic applications.—The ordinary antiseptic combines with every kind of albumen. It thereby loses its bactericidal and its penetrative power. Its *bactericidal power* is, of course, not finally abolished until the antiseptic has encountered and combined with its full complement of albumen. Its *penetrative power*—and penetrative power means capacity for diffusing outwards through any medium in a chemically active condition—is, in the fluids of the wound, very rapidly abolished. For, when the medium which is to be penetrated contains even a trace of albumen, this will immediately quench the "*antiseptic emanation*"—meaning by this that fractional quantum of antiseptic which is carried out by diffusion into the surrounding fluids.

These general truths are firmly based upon experiment. It can be demonstrated that none of our ordinary antiseptics extirpate microbes enveloped in dead or living tissues, or in serous or purulent discharges; and that none diffuse into the walls or recesses of the wound. The sterilising action of antiseptics applied in the wound will thus be strictly limited to the destruction of any microbes which may be lying bare; and sterilisation will not extend beyond that portion of the wound surface to which the antiseptic is actually applied.

Inadequacy of drainage as usually practised.—The theoretical requirements for a complete scheme of drainage are, *first*, that there shall be an outflow from the infected tissues to the external surface or to the surface of a wound cavity; and, *secondly*, where a wound cavity exists, that there shall be drainage from that cavity to the exterior.

Drainage from the tissues.—In the customary treatment of wounds drainage from the tissues is not specially insisted upon—mere incision with or without fomentation being assumed to do in this respect what is necessary. In reality, however, in œdema only will sufficient drainage be given by this method. In tissues of normal density nothing like adequate effusion will be obtained, the lymph flow being here rapidly arrested by clotting and desiccation. And, where we are dealing with densely infiltrated tissues, incisions may fail to furnish even as much as a drop of exudation.

Drainage from the cavity of the wound.—Drainage-tubes, of course, do not induce any outflow of lymph from the tissues. They drain only from the cavity of the wound—outflow ceasing as soon as ever the well-head in the tissues dries up.

Summary of criticisms on the traditional method of treating wounds.—It has appeared above (*a*) that antiseptics do not exert any effective action in the wound either in the direction of extinguishing the infection or keeping down bacterial growth; (*b*) that the usual procedure of incising and inserting drainage-tubes provides, in place of that continuous welling out from the lymph spaces to the exterior which we require, a drainage which rapidly stanches at the source; and (*c*) that in the ordinary treatment of wounds no steps are taken to disperse infiltration; or accelerate the separation of the sloughs; or bring antibacterial lymph or phagocytes to the seat of infection.

In short, the treatment of wounds by a combination of antiseptics, incision, and mechanical drainage is a therapeutic method which constantly disappoints, because it fails to kill the infecting microbes and at the same time fails to give to the organism opportunity for ridding itself of the infection.

And lastly—and this point cannot be too much insisted upon—in the ordinary treatment of septic wounds not nearly enough care is taken to prevent those active and passive movements which lead to the mechanical impulsion of microbes along the lymphatics, and to *auto-inoculations*.

3. THE IDEAL OF PHYSIOLOGICAL TREATMENT IS TO GIVE INTELLIGENT AID TO THE ORGANISM IN COMBATING THE BACTERIAL INFECTION.

Saline dressings supply a means for evoking, in the infected wound, certain requisite physiological reactions. By their aid we can, while at the same time inhibiting bacterial growth, drain the tissues, resolve infiltration, and promote the separation of the sloughs—besides giving other assistance.

4. PHYSICAL AND PHYSIOLOGICAL ACTION OF CONCENTRATED SALT SOLUTIONS.

(1) A concentrated salt solution will attract water; and, except in the case where a membrane which is impermeable to albumen is interposed, the outflowing current of water will carry out with it the whole of the protein substances which it holds in solution. This means that hypertonic salt solution applied to tissues lying bare in the wound (or to granulating surfaces) will operate as a *lymphagogue* drawing out from the infected tissues lymph which has spent all its antibacterial energy, and drawing into the tissues from the blood stream lymph inimical to microbic growth.

(2) Brought into direct application upon leucocytes a hypertonic solution (what is in view here is a solution containing 5 per cent. salt) will disintegrate leucocytes, setting free the tryptic ferment they contain. Such a hypertonic salt solution will also exert a number of inhibitory actions.

(3) It will inhibit the action of the tryptic ferment set free in the wounds.

(4) It will inhibit coagulation and so prevent the sealing up of the orifices through which lymph pours into the wound.

(5) It will inhibit leucocytic emigration into, and prevent phagocytosis in the cavity of the wound.

(6) It will inhibit microbic growth.

5. PHYSICAL AND PHYSIOLOGICAL EFFECTS OF NORMAL (0·85 PER CENT.) SODIUM CHLORIDE SOLUTION.

Normal solutions of sodium chloride exercise—as many other substances also do—a positive chemotactic effect on white corpuscles. In other words, they will when applied to the surface of the wound bring leucocytes to the surface.

In moderately dilute solutions (solutions of 0·85 per cent. are here in view) salt does not interfere with the activity of trypsin, nor does it inhibit blood or lymph coagulation, phagocytosis or microbic growth.

6. THERAPEUTIC EMPLOYMENT OF HYPERTONIC SALINE SOLUTION IN THE EARLY STAGES OF THE INFECTED WOUND.

By the time the patient reaches the Casualty Clearing Station his wound will generally have assumed the characters of a lymph-bound, infiltrated, and sloughing wound; or it will be fast getting into this condition. And even though under care in hospital the wound may have been coming out from this condition, it will, on long journeys when redressing is difficult, be very prone to fall back into it (*vide infra, Subsection* 14).

The first requirement when we have an infected, lymph-bound, infiltrated, and sloughing wound will be—to get rid of the coating of scab and fibrin adhering to the surface of the wound, and set the lymph-flow going, to resolve the infiltration, and to promote the separation of the sloughs. This involves two successive operations. In the *first* we make use of the hypertonic solution undiluted; in the *second* we turn its dilution to profit.

Stage in which the Hypertonic Solution comes into Operation Undiluted.

The striking feature here will be the outpouring of lymph. But there will at the same time: (*a*) in the depth of the tissues, (*b*) on the surface, and (*c*) in the cavity of the wound be evoked other reactions which cannot be directly followed by the eye.

(*a*) *In the depth of the tissues* there will be substituted for the spent lymph which has been extracted lymph freshly drawn from the blood stream. This means that there will be substituted for a lymph which is favourable to the growth of all microbes indiscriminately a lymph which will stop the growth of *sero-saprophytic bacteria*, and *imperfect serophytes* (such as the gas-gangrene bacillus); and at the same time seriously impede the growth of serophytic bacteria, above all the growth of the streptococcus.[1]

Further, the microbes in the tissues, which when immersed in the spent lymph were insusceptible, will, immersed in the fresh lymph, become susceptible to phagocytosis. And in the induction of the phagocytosis in the interior of the tissues the imbibed salt will, we may take it, play a contributory rôle. For we have seen that salt, appropriately diluted, stimulates leucocytic emigration.

(*b*) *In the more superficial regions of the walls of the wound and adhering sloughs* the hypertonic salt solution will break down the leucocytes and set free tryptic ferment[2]—ferment which will, as we saw, not come into action so long as the concentration of the salt is maintained. The coagulation of the lymph on the face of the wound will also, as we saw, be inhibited by the hypertonic salt solution.

(*c*) *In the cavity of the wound* microbic growth will at the outset be completely arrested by the hypertonic salt, and it will, after the lymph has begun to pour out, be inhibited to different degrees according to circumstances by the combination of salt and antitryptic exudation. So long as the salt solution is maintained at full strength, both emigration into and phagocytosis in the cavity of the wound would be inhibited.

Sum-total of clinical effects produced by the undiluted hypertonic salt solution.—There will have been established, in the depth of the tissues, conditions favourable to the extermination of the microbic infection; and in the cavity of the wound conditions which will restrain microbic growth.

Stage in which the Dilution of the Hypertonic Salt Solution is Turned to Profit.

As soon as the hypertonic solution in the cavity of the wound has been sufficiently diluted by outflowing lymph, the salt diffuses out from the infiltrated walls of the wound and the sloughs; and with this the tryptic ferment previously set free in these comes into action, and goes about its work of *cleansing digestion*—resolving the products of inflammation in the infiltrated tissues, and severing the connecting strands by which the sloughs are bound to the face of the wound. At the same time, and this, be it noted, serves as a signal to the eye that the dilution of the salt solution has reached the point where all its inhibitory effects are abolished—leucocytes emigrate into the wound, and the discharge begins to assume a purulent character. Now also the bacteria begin to multiply in the cavity of the wound.

We cannot afford to let all this go on very long unchecked. For as more and more trypsin finds its way into the exudate, or is set free in it from leucocytes disintegrated by microbic poisons, the effusion comes to furnish a more and more congenial nutrient medium for microbes, and the check imposed by phagocytosis is more and more completely removed. Finally, the exudate becomes tryptic, and if the re-dressing of the wound is any longer delayed ground will now be rapidly lost (*vide infra, Subsection* 12—*Indications which call for the re-dressing of the wound*).

It will have to be remembered in connexion with this description that the conditions will in every wound be perpetually changing, and that these changes will not keep time in the different parts of a large wound.

7. UNDER CERTAIN SPECIAL CIRCUMSTANCES THE HYPERTONIC SALT SOLUTION SHOULD BE USED IN A DIFFERENT WAY.

Method in which hypertonic salt solution should be used when gas gangrene, streptococcic cellulitis, or other acute tissue infection supervenes, or where we are dealing with an infection of a joint.—Our whole concern here must be to draw out as rapidly and exhaustively as possible the corrupted lymph[3] which occupies the tissue spaces, replacing this with uncorrupted lymph drawn from the capillaries. To achieve this we must, after freely incising the tissues, or opening the infected joint, apply hypertonic salt solution and maintain this in full strength until we have got the upper hand of the infection.

Method in which the hypertonic salt solution should be used where we are threatened with secondary hæmorrhage.—Our aim and object here must be to prevent any digestive action in the neighbourhood of the endangered artery. Translated into practice, this means that we must apply hypertonic salt solution and maintain it at full strength so as to prevent any trypsin which may be liberated in the wound coming into action.

8. GENERAL INSTRUCTIONS FOR THE CARRYING OUT OF THE LINES OF TREATMENT INDICATED ABOVE.

Concentration in which the hypertonic salt solution ought to be brought into application.—For all ordinary purposes the best hypertonic solution to employ is a 5 per cent. solution of common salt. Where we require more vigorous lymphagogic effect we may resort to a 10 per cent. solution, or even to a stronger solution. But these are very painful when applied to skin edges and sensitive granulations; and salt applied in saturated or nearly saturated solutions will often cause sloughing of the superficial tissues (*vide Subsection* 10, *Footnote*).

Most convenient form of stock solution to keep on hand.—The most convenient stock solution to keep on hand is a saturated saline solution, made by shaking up water with an excess of salt and then allowing this to settle. Such a solution contains at ordinary temperatures 35 per cent. of salt.

Diluted 1 part saturated solution	with	6 parts	water	it gives a	5%	solution.
,, 2 parts	,,	,, 5	,,	,,	10%	,,
,, 1 part	,,	,, 39	,,	,,	0·85%	(physiological solution).

N.B.—Hot water should be employed for making the dilutions required for all saline dressings and irrigations. For the physiological reactions which are to be evoked, whether these be active hyperæmia and transudation, or tryptic digestion, or emigration and phagocytosis, are all impeded by cold and favoured by heat.

[1] The inhibition of microbic growth obtained with the serum of the patient with a large or even moderate-sized wound is much greater than that obtained with a normal serum. This, as comparative experiments have shown, is connected with the fact that the antitryptic power of the wounded man mounts up with very steep ascent (i.e., in the course of a couple of days), to a level three to eight times higher than the normal.

[2] The presence of trypsin in the wound can be very easily demonstrated. We need only collect a sample of pus or slough on a small swab of cotton wool; introduce this into milk containing ¼ per cent. of calcium chloride cryst. and then place this at a temperature of 50° to 55° C. (that is, in water just not too hot to hold one's hand in). If trypsin is present the milk will now rapidly clot. But it must be borne in mind in connexion with clotting obtained with a slough that, since under the conditions of the experiment we dilute our material, our test will give a positive result even when we have in the wound sufficient salt to prevent the ferment being actually operative.

[3] The lymph has ordinarily lost some, and in very severe infections it may have lost all, its antitryptic power. Further, in gas gangrene—and let me here interpolate that we have in gas gangrene, when fully developed, a profound acid intoxication—the lymph in the focus of infection often shows a much diminished alkalinity.

9. METHOD OF APPLYING HYPERTONIC SALT SOLUTION SO THAT IT MAY PRODUCE AN ADEQUATE LYMPHAGOGIC ACTION, AND AFTERWARDS PROVIDE OPPORTUNITY FOR DIGESTIVE CLEANSING OF THE WOUND.

This will be the proper way of employing hypertonic salt solution in the infiltrated and sloughing wound. The following are the points to be borne in mind:—

(*a*) For the achievement of an adequate lymphagogic effect we must use quite considerable quantities of hypertonic solution. The dressings ought to come directly out of the hot solution and be applied dripping wet.

(*b*) In order that there may follow upon the lymphagogic action a cleansing digestion, the amount of salt employed must be kept within such limits as will allow of its being within a reasonable period diluted by the outflowing lymph. In other words, we must not use too much hypertonic salt solution, nor use too concentrated a solution; nor supplement with large packs of saturated salt solution or salt tabloids.[4]

In order to anticipate that pullulation of microbes which will supervene when the exudate becomes tryptic we ought to redress the wound as soon as the discharge begins to be purulent.

The procedure in carrying out these principles will, of course, vary according to the anatomical conditions of the wound. In point of fact, three different anatomical types of wound have to be considered: (*a*) The wound which from the beginning lay fully open or which has been opened up so as to render every portion of its surface fully accessible; (*b*) the wound where, owing to folds, or blind passages, or a tunnelled way, portions of the surface are not fully accessible; and (*c*) tubular wounds which are throughout their whole course more or less difficult of access.

(*a*) In the *first* case we have only to pack the wound with gauze thoroughly wetted in hot 5 per cent. salt solution. We cover this in with any impermeable tissue, such as jaconet. When the time comes for redressing the wound all trace of pus ought, before reapplying the saline, to be carefully removed. For pus treated with strong salt is converted into a sticky intractable substance which forms an impermeable coating on the walls of the wound.

(*b*) *Where the wound is pocketed or tends to flap together* the best procedure is to employ a bath of warm 5 per cent. saline. Should the position of the wound render immersion in a bath impracticable, it ought to be irrigated with warm 5 per cent. saline solution, the fluid being distributed over the whole surface of the wound by an arrangement of bandages.[5] The bath or irrigation ought to be discontinuous—intervals for digestive cleansing alternating with periods of lymphagogic and leucocyto-lytic action.

(*c*) Where we have a *tubular wound* it will, of course, be futile merely to insert a drainage-tube and cover its mouth with a piece of gauze wrung out of hypertonic salt solution. The rational procedure will here be to make windows in the tube, to cut it open longitudinally, and to lay into the hollow a folded strip of gauze, thoroughly wet with saturated salt solution. The tube thus armed is to be introduced into the wound after this has been syringed with 5 per cent. saline.[6]

10. METHOD OF APPLYING HYPERTONIC SALT SOLUTION WHERE WE WANT TO MAINTAIN ITS STRENGTH UNDIMINISHED SO AS TO OBTAIN ITS FULL LYMPHAGOGIC EFFECT AND SUPPRESS ALL DIGESTIVE ACTION.

It will be remembered that this is the way in which hypertonic salt solution should be used where we are threatened with secondary hæmorrhage; or are dealing with an infected joint; or with gas gangrene infection; or streptococcic cellulitis (*Vide supra, Subsection* 7). Let us consider how, using the ordinary hypertonic solution and the stock of solution of saturated salt, to effect our object in the three types of wound already referred to—the *completely* accessible, the *incompletely accessible*, and the *tunnel* wound.

(1) In the first variety of wound we, as before, pack with gauze thoroughly wet with 5 per cent. salt; but now reinforce by a backing of gauze thoroughly wet with saturated salt solution; and, as before, cover with some impermeable material. Or, as an alternative, we, at short intervals, renew the hypertonic solution, feeding this in with a syringe through a drainage-tube going down to the face of the wound.[7]

(2) In the case of the only *partially accessible wound* we resort as before to a bath of 5 per cent. saline or to irrigation with this solution, varying our procedure only in the respect that we make the bathing or irrigation continuous, or as nearly as possible continuous. When immersion in a bath and irrigation are both impracticable the wound ought to be dressed as in (1).

(3) In the case of the *tunnel wound*, we at short intervals renew the supply of salt: first withdrawing the old wick; then syringing out with 5 per cent. of salt; and then substituting for the old wick a new one taken fresh from saturated salt.

11. NATURE OF THE EXTERNAL COVERING TO GO OVER THE WET SALT DRESSINGS.

The most usual practice is to place immediately outside the saline dressings a thick packing of dry cotton-wool, and again outside this a bandage. This seems to be dictated by the idea that the cotton-wool will soak up the discharges, and the notion that the capillarity of the cotton-wool and evaporation from its outer surface will reinforce the drawing action of the salt. In point of fact, however, all the cotton-wool does is to suck out some of the salt solution from the dressings and to evaporate this to dryness, putting in this way a certain quantum of salt out of action. Moreover, the notion that capillary action and evaporation would promote drainage from the tissues is in conflict with everyday experience, which shows that when we apply a dry dressing or let a wet dressing evaporate, the outflow of lymph from the wound ceases, and the dressing sticks to its surface.

The rational method of covering in saline dressings is to use, instead of cotton-wool, an impermeable covering.[8] Then instead of the salt solution being carried outwards by capillarity and evaporation, it will by diffusion be carried inward. The difficulty that with this form of dressing discharges will escape from under the impermeable covering can be met either by frequent re-dressing, or by placing cotton-wool outside the jaconet. In the case of wounds of the extremities, perhaps the simplest method of all is to dispense with all coverings over the salt dressings, merely renewing the salt packs at frequent intervals. But here,

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[4] In this connexion it will be well to emphasise that to fill into the wound cavity large numbers of salt tabloids must be pronounced wrong practice in the case where we judge the wound to be one which stands in need of digestive cleansing.

[5] See the Author's Memorandum on the Irrigation of Wounds, THE LANCET and Brit. Med. Jour., Oct. 16th, 1915.

[6] This procedure might at first sight seem open to objection (*a*) on the ground that saturated salt solution would here be brought into application upon the tissues; and (*b*) on the ground that to obstruct a drainage-tube by gauze would be to render it useless. In connexion with the former objection, it will suffice to point out that direct contact of the saturated salt solution with the tissues is avoided by the interposition of the wall of the tube; and that the salt in the wick will come into operation only through the medium of the weaker salt solution with which the wound has been syringed out. In connexion with the latter objection, consideration will show that it is only in ordinary *drainage ex vacuo*—i.e., it is only when we aim at keeping our wound cavity empty, and when we are dealing with viscid pus, and when unaided gravitation supplies in our scheme drainage out whole motive force—that it becomes incumbent to provide an unobstructed conduit to the exterior. In *drainage ex pleno*, such as is here proposed, we deal with a watery lymph effusion which wells over from the wound, and which only hermetical sealing could bank back.

[7] Another method which has been extensively practised is that of packing the wound with tabloids of salt, holding these off from actual contact with the tissues, by several folds of gauze. This would seem to give in different cases different results. In certain cases—such as when an open knee-joint is packed with tabloids of salt, disposed throughout the gauze with close and regular interspacing, the interior of the wound remains perfectly dry. The explanation would seem to be that the salt here comes into application in the form of a saturated solution all over the surface of the wound, condensing the tissues until they become impermeable to lymph; and at the same time pickling them in such a way, as, perhaps, to restrain all microbic growth in their interior. In other cases—for example, where a bagful of tabloids is introduced into the well of a large wound—there is obtained the ordinary lymphagogic effect. Here it would seem that the salt operates in form of a saturated solution upon the portion of the wound only lying nearest to the tabloids. And, hereabouts the tissues look and feel exactly like pickled meat. In regions more remote from the tabloids the salt will naturally be much less concentrated. And it is presumably from these regions that the copious lymph-outflow is derived.

[8] The prejudice against the use of impermeable coverings no doubt originates in the observation that discharges, when confined after they have become tryptic, will set to work and digest the surface of the wound. The proper remedy is not to discard the impermeable covering, but either to re-dress before the discharges become tryptic, or prevent them becoming tryptic.

if we want to clean off sloughs or resolve infiltration, we shall have to alternate with our dressings of hypertonic saline solution dressings of physiological saline solution.

12. INDICATIONS WHICH CALL FOR THE RE-DRESSING OF THE WOUND.

A septic wound requires to be re-dressed under two quite different conditions.

(*a*) It requires re-dressing as soon as tryptic ferment is set free in the cavity of the wound, such trypsin being set free from leucocytes broken down by microbic growth. For here, as soon as the originally antitryptic exudation becomes tryptic, all manner of sero-saprophytic microbes will multiply unrestricted and bacterial poisons may be absorbed, and at the same time phagocytosis will be inhibited, while the young tissue elements, which are the agents of repair, will be subjected to destructive digestion.

(*b*) Again, every septic wound ought to be re-dressed as soon as it becomes lymph-bound. For as soon as the exudation stanches, and lymph fresh from the blood ceases to come into application, the microbes in the tissues, being now no longer inhibited by their growth or phagocytosed, find congenial conditions and multiply.

It requires to be emphasised in connexion with these two indications for re-dressing that in the case of the septic wound intervention is much less urgently called for where we have *retention of corrupted discharges* than where the wound becomes *lymph-bound*. In the case of the *former* all we have to fear is a pullulation of microbes in the cavity of the wound, some absorption of septic products, and some injury of the tissues of repair. In connexion with a *lymph-bound wound* we may at any moment have a wide extension of the tissue infection, taking the form of gas gangrene or streptococcic cellulitis.

13. PRINCIPLE UPON WHICH CASES OUGHT TO BE CHOSEN FOR RE-DRESSING WHERE PREFERENCE MUST BE GIVEN TO THE MORE URGENT.

What has been said above on re-dressing ought to be specially kept in mind where it is impossible to inspect and re-dress every wound. In such cases the surgeon has, as a rule, simply pursued the practice followed in ordinary aseptic operation wounds. That is, he has, with a view to preventing the invasion of microbes from without, re-dressed the cases where the discharge has soaked through, giving to these preference over those with unsoiled dressings.

In septic wounds—for here the microbes are in the citadel and not outside the walls—we ought to follow an exactly opposite policy. Where the outside dressings are wet with discharge, in other words, when presumably lymph is being actively poured out, we may be confident that the wound is not coming to any harm. We may accordingly, when other work presses, quite properly postpone re-dressing such cases. The contrary will hold of a gravely wounded man whose dressings are unsoiled. In such a case it is always possible that we may underneath quite clean dressings have a lymph-bound wound. We ought without delay to satisfy ourselves with respect to this.

14. PRECAUTIONS TO BE TAKEN IN HANDLING THE WOUND TO PREVENT AUTO-INOCULATIONS AND A DISPERSAL OF SEPTIC INFECTION ALONG THE LYMPHATIC CHANNELS.

Like the acutely sick, all the wounded are suffering from a bacterial infection. And the same general therapeutical principles apply. So long as microbes in large number are harboured in the tissues we have pyrexia. And the patient's condition will be aggravated by all dispersion of the infection and absorption of bacterial poisons into the blood. So that in every case the infected man will need to be kept at rest, and the really heavily infected will require to be kept at *absolute rest*. This requirement is, of course, in the case of those suffering from infected compound fractures more or less perfectly complied with by the application of apparatus for fixing the limb. But not only wounds complicated by fracture, but all wounds with the infected tissues in their neighbourhood ought so far as possible to be immobilised. Moreover, this ought to be begun immediately after the wound has been inflicted, and to be continued so long as appreciable infection persists in the depth of the tissues. In connexion with operative procedures it is, of course, impracticable to conform completely to this requirement. But none the less the requirement should never be lost sight of. It is scientifically reprehensible to cast loose, as is so often done under an anæsthetic, a fractured limb from all splints, deliver it over to an orderly for energetic washing and disinfection, and permit the foot or hand below the fracture to be used as a handle for raising or turning over the limb. All the necessary passive movements ought to be reduced to an absolute minimum. And the light hand of the skilful surgeon will, in operating on an infected case, be a very valuable asset. In the same way, seeing that very efficient apparatus has now been devised, fractured limbs ought no longer to be put up in such a way as to allow of sagging or displacement during re-dressing. Again, in changing the dressings on large flesh wounds on an arm or leg, great care ought to be taken not to manipulate, or flex or extend, or unnecessarily disturb the position of the limb.

It is difficult to doubt that when these precautions are neglected bacteria from the infected area will be propelled along the lymphatic channels in the direction of the heart. And measurements of the opsonic power of the blood and, indeed, simple inspection of the charts establish that all readjustments of the position of a fractured limb, and probably all re-dressing of large wounds, are followed by elevations of temperature corresponding to very serious auto-inoculations. The same will, of course, apply to shocks and jolts received when the infected patient is being carried from the ward to the operation theatre, or is being transported by train or motor.

15. MANNER IN WHICH WOUNDS SHOULD BE DRESSED IN PREPARATION FOR LONG JOURNEYS DURING WHICH THEY CANNOT BE KEPT UNDER CLOSE OBSERVATION.

What has been said in the preceding subsections has an important bearing upon the procedure to safeguard the patient against that delay in re-dressing which is inevitable during the long hours which will be consumed in travelling from the front to the base, or from the base to England, and in settling down into a new hospital. The danger from microbic pullulation in the cavity of the wound and tryptic digestion, and, on the other hand, the much graver danger of a tissue infection taking origin in a lymph-bound wound, have here to be provided against. This means that we have to arrange for a continuous outflow of lymph, and at the same time to arrange for the surface of the wound being kept thoroughly wet. The proper course will be to dress the wound as indicated in *Subsections* 10 *and* 11, *supra*, applying outside the impermeable covering dry cotton-wool. Thus treated the patient may arrive at his destination with soaked dressings; but he is not likely to arrive with corrupted pus; and we can be practically certain that he will not arrive with a tissue infection spreading from a lymph-bound wound.

16. METHOD OF CORRECTING CERTAIN UNDESIRABLE AFTER-EFFECTS WHICH MAY SUPERVENE UPON THE ILL-CONSIDERED, OR TOO LONG CONTINUED, USE OF HYPERTONIC SALT SOLUTIONS; AND INDICATIONS AS TO WHEN THE HYPERTONIC SALT SOLUTION OUGHT TO BE DISCARDED IN FAVOUR OF A WEAKER SOLUTION.

The rationale of the therapeutic employment of hypertonic solutions is, as we have seen, to be found in the fact that (1) they drain the tissues; (2) break down the leucocytes in sloughs, and in the walls of the wound, and so give us, quite apart from any destruction of leucocytes by microbic agency, the trypsin we require for the digestive cleansing of the wound; (3) they produce active hyperæmia; (4) prevent clotting of the lymph in the walls of the wound; (5) suspend the action of the tryptic ferment set free from the leucocytes; and (6) inhibit bacterial growth—the inhibitory actions last in question being exerted only so long as the strength of the salt solution is maintained. In addition—but this counts, of course, as a disadvantage and not as a therapeutical asset—hypertonic solutions repel leucocytes and prevent phagocytosis.

If we want, in employing hypertonic salt solution, to turn its therapeutical qualities to best advantage, we must be continually on the watch to anticipate and correct any of the defects of its qualities.

(1) Where blood continues to ooze from an operation stump or wound which has been packed with hypertonic salt solution, this will be due to this anti-coagulative agent having been applied before bleeding has stopped. The proper procedure will always be to postpone the use of hypertonic salt until all oozing of blood has ceased. Applied then, the salt will not resolve the blood clot; and where the

hypertonic solution applied is a 5 per cent. solution, a very little dilution will bring it to the point when blood clotting will no longer be inhibited.

(2) When the face of the wound is found covered with a firmly adherent glutinous coating, this has been derived from leucocytes broken down by the direct application of strong salt. The way of avoiding this obstacle—it is, as a matter of fact, a serious obstacle to effective draining and irrigation—is to clean out all pus from the wound before bringing the hypertonic salt solution into application.

(3) Where, as very rarely happens, the granulations become œdematous this will be due to the over-prolonged application of concentrated salt solutions. It would seem that here the salt which is imbibed into the granulations is not sufficiently promptly carried off by the circulation, with the result that fluid is drawn into the salt-impregnated tissues, both from the underlying strata, and also (when their salt content diminishes) from the discharges. The remedy will be to discontinue the application of salt, and to apply hot fomentations in order to activate the circulation and promote absorption.

(4) Where the granulations assume a bright coral-red colour, and bleed at the least touch, it will be well to reduce the concentration of the salt solution—in the case where drainage of the tissues is still required to 2·5 per cent., and in the case where no further lymphagogic effect is required to 0·85 per cent.

(5) Quite apart from the development of any undesirable secondary effects, it will be well as soon as every trace of induration has disappeared, and all sloughs have been got rid of, to substitute for the hypertonic a physiological salt solution. The rationale of this is, that there will here still remain on the face of the wound, even though it looks to the naked eye perfectly clean, serophytic microbes, which, though quite at home in the serum, can be killed by phagocytosis. In order to kill these—and let us note that they are not killed but only inhibited in their growth by hypertonic salt solution—we must bring leucocytes to the surface of the wound.

17. THERAPEUTIC APPLICATION OF PHYSIOLOGICAL SALT SOLUTION.

What remains to be done is (*a*) to destroy the serophytic bacteria—streptococci and staphylococci—which still survive upon the face of the wound; and (*b*) to reduce the extent of surface lying open to infection, holding before ourselves always as an ideal the closure of the wound by secondary suture.

Destruction of the serophytic microbes remaining on the face of the wound.—A surface infection such as we have still to deal with can be effectively combated by keeping the wound wet with physiological salt solution and re-dressing at short intervals. The application of physiological salt solution will, as we have seen, promote the emigration of phagocytes, the frequent re-dressing will prevent the setback that will occur every time that leucocytes die off and set free their trypsin in the wound; and the combination of the two will, in the case where the deeper tissues have been freed from infection, either exterminate the surface infection, or at any rate so nearly exterminate it as to make it safe to embark upon an operation for the closure of the wound.

18. FINAL STAGES IN THE TREATMENT OF THE WOUND.

Conditions under which wounds may be closed by secondary suture.—Secondary suture may be safely embarked upon when we have favourable bacteriological conditions in combination with favourable anatomical conditions.

The bacteriological conditions may be pronounced favourable when (*a*) microscopic examination of fluid from the depth drawn out by a "lymph leech"; or failing this, clinical evidence points to the probability of our having got rid of all the deep infection, and when (*b*) stained impression preparations made from the wound surface show that we have there large numbers of perfectly well conditioned polynuclear leucocytes, and a complete absence of microbes, or only here and there a stray microbe.

The anatomical conditions are favourable when we can, with or without undercutting, bring together the skin edges without putting too great a strain upon the sutures, or leaving underneath any hollow spaces. The operation of secondary suture may be undertaken either before the wound surfaces are covered in with granulations, or subsequent to this—the former of these dates being, from the bacteriological point of view, the more favourable, in the respect that there will be less risk of infection lurking below the surface.

It will, in every case, be advisable—for the conditions may change within the lapse of a few hours—to let the operation follow immediately upon the examination of the impression preparations.

In connexion with secondary suture, as in every other case where a wound is sewn up without adequate guarantee for its asepticity, it will always be imperative to keep the patient under the anxious observation of the operator for at least a week afterwards.

Procedure where the wound cannot be closed by secondary suture.—When the anatomical conditions do not allow of the wound being closed by secondary suture, we must fall back on the policy of persistently combating the surface infection, consolidating the granulations, and encouraging the covering in of these by epithelium. In the present state of our knowledge, perhaps the best we can do will be to employ dressings of physiological salt or, better, of Ringer's solution (for this contains a large assortment of physiological useful salts), re-dressing the wound frequently. Where we are dealing with a large defect of skin, grafting may usefully be resorted to.

A CONTRIBUTION TO THE ETIOLOGY OF SHELL SHOCK.[1]

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THE functional nervous affections of modern warfare are essentially the same as the functional nervous affections of civil life, and in consequence should be of great value in helping to elucidate problems connected with the etiology of functional nervous disease in general. For instance, while we must admit that, up to the present, more has been done to deny than to disprove the universal application of the "sex" theory by Freud and his followers, it is obvious that these cases of so-called "shell shock" should be invaluable for the latter purpose. At the present time, however, the etiology of "shell shock" is buried in confusion, owing to three main difficulties, namely:—

1. *Bad terminology.*—As pointed out by Dr. Henry Head[2] the term "shell shock" has been used indiscriminately to include all functional nerve cases, whether due to shell explosions or not, and also not a few cases of organic nature. By force of use in civil life the terms "neurasthenia," "psychasthenia," and "hysteria," have become narrowed and fixed, and do not meet our needs in classifying cases which commonly exhibit elements of all three of these conditions.

2. *Dubious clinical histories.*—To obtain an exact and reliable history of the causative events in a case of shell shock is usually difficult and frequently impossible. Apart from the possibility of temporary true concussion, we have to contend with amnesias of various grades and durations, and also with the distorting mechanisms of rationalisation and repression by the patient.

3. *Rapid changes in clinical condition.*—In shell shock changes in clinical condition may occur with such startling rapidity that the medical officer at the front and the medical officer at the base or at home may see the same patient in conditions so dissimilar that they are compelled to different conclusions. (It is very exceptional for any clinical notes to accompany these cases from the front.)

For a period of six months, while attached to No. 12 General Hospital, I was responsible for the diagnosis and subsequent destination of all the functional nervous cases which passed through one of our medical bases in France. Though unable to watch the subsequent progress of these cases, I had the advantage of seeing them at an earlier stage than observers at home, and in doing this work became much impressed by two facts—namely, (*a*) that the condition

[1] The term "shell shock" is used unwillingly in this paper in order to avoid multiplication of names; but this use is limited to cases of functional nervous disease resulting from fighting at the front, all organic cases, mental deficients, simple chronic epileptics, &c., being excluded.

[2] THE LANCET, Feb. 5th, 1916, p. 306.

of shell shock was of extraordinary rarity amongst the wounded; and (*b*) that the vast majority of these cases, if not all, were due to psychic shock, and not to physical shock.

In view of the confusion now existing, it seems worth while to consider the possible etiological factors of these cases, arranging them under the following headings:—1. Wounds. 2. Possible physical causes: (*a*) physical exhaustion from exposure and hardship; (*b*) physical concussion. 3. Possible chemical causes: Absorption of toxic gases generated in shell explosions. 4. Possible psychic causes: (*a*) Gradual psychic exhaustion (1) as a predisposing cause, and (2) as a cause of neurosis *per se*; (*b*) Sudden psychic shock from (1) horrible sights, (2) losses, (3) being near an explosion, and (4) sounds. 5. Causes of relapse. This list is arranged in the above order for convenience of discussion, wounds being placed first because they are of outstanding importance in a negative respect. The theory of gas liberation in the blood advanced by M. Arnoux has been commented on by Surgeon-General W. F. Stevenson[3] and need not be considered here.

1. *Wounds and Shell Shock.*

In the 12 months during which I was attached to general hospitals in France many thousands of wounded, the majority being the subjects of shell wounds, passed through the surgical divisions of these hospitals; yet I cannot now recall to mind a single instance in which I was called in to see a condition of shell shock complicating a wound. In fact, shell shock was not to be seen in the surgical wards. Mr. Beckwith Whitehouse confirms this observation in a letter as follows: "From my experience of 12 months' surgery at No. 8 General Hospital I should say that functional neuroses are amongst the rarest of the conditions found in the surgical cases admitted to a base hospital. 'Shell shock,' as exemplified by monoplegias, paraplegias, mutism, somnambulism, fits, hysterical tics, and neurasthenia, is conspicuous by its absence. Amongst the large number of pure shell wounds I cannot recall a single instance of shell shock."

The cheerfulness of our wounded is an established fact, absent only in the presence of surgical shock or severe septic intoxication, and though some may show a slight degree of nervous exhaustion this is usually of late development, manifesting itself when the wound condition is such that a return to the front becomes a factor to be reckoned with. Out of 150 of my cases 14 had been wounded, but in all of these the wound was trivial; in two the wound actually followed the onset of nervous symptoms, and in four the wounds were completely healed before the onset of symptoms. Consequently, not only may it be said that in no single case did a wound merit consideration as a physical cause of shell shock, but, further, that the wounded appear to be comparatively immune to shell shock. In view of the fact that the wounded must have been exposed to the physical and chemical effects of shell explosions to a greater degree than the unwounded, this fact is most significant.

2. *Possible Physical Causes.*

(*a*) *Exposure and hardship.*—We might presume that these would gradually exhaust physical and psychic tone, and so lessen psychic resistance; but our troops in France are very well fed and are free from epidemic infections, and under these circumstances moderate cold and exposure tend to improve rather than to diminish physical well-being. Of 142 cases in which histories could be obtained only three offered exposure and hardship as the cause of their nervous condition. One, a man who gave a family and personal history of "fits," had been punished for purposely injuring his trigger finger the second day he was in the trenches. The other two gave neuropathic family histories and were of obvious neuropathic nature themselves. In other words, these three were all "terror" cases occurring in neuropathic individuals, and their complaint of exposure as the cause of their condition may be discounted as unconscious rationalisation, or even, perhaps, conscious untruth.

I have no observations in connexion with troops exhausted by marching, but in respect of trench warfare, when the troops are well fed, exposure and hardship do not dispose to nervous breakdown.

(*b*) *Physical concussion.*—This may be produced by alterations in atmospheric pressure resulting from a shell explosion,[4] by blows from sandbags, beams of wood, or earth when buried, or by a combination of these forces. If true concussion were a common cause of shell shock it would not be unreasonable to expect (*a*) that shell shock would occur among the wounded at least as frequently as among the unwounded; (*b*) that the neurosis caused by concussion would follow a broad type, with which we should by now have become acquainted, rather than copy every known type of functional nervous disease; (*c*) that the concussion should be severe enough to cause unconsciousness at the time it occurred. The absence of shell shock among the wounded has been dealt with above, and in spite of 18 months' study of these cases we cannot indicate any type of neurosis, constant even within wide limits, as caused by physical concussion, so that expectations (*a*) and (*b*) are immediately negatived. With regard to expectation (*c*) difficulty is caused by dubious clinical histories, but in this connexion I think that the general tendency is for these patients to exaggerate the degree and duration of unconsciousness. Investigation of 142 cases of shell shock shows that 52 of them may have been exposed to the physical effects of explosion, these men having been near a bursting shell, or knocked over or buried thereby. Since in most cases the men were in the trenches, and the shells exploded outside, they would have been out of the direct line of air pressure. In 9 of these cases the question of true unconsciousness remains doubtful, 10 probably were rendered really unconscious, generally as the result of a blow from a sandbag or beam, but 33 did not lose consciousness at all. This shows that true concussion was neither frequent nor severe in these cases.

Further investigation of this group show that in 8 the subsequent neurosis was almost certainly due to psychic shock; 7 were certainly partly psychic in causation; 6 did not develop symptoms until late (one man had no symptoms for three weeks after the explosion incident); 3 had had similar attacks before, in civil life; in 1 the neurosis antedated the explosion incident; in 1 similar symptoms recurred from the psychic stimulus of having to go to the front again; and 10 developed types of neurosis which, in my opinion, are most unlikely to have been caused by simple physical concussion, namely, 2 hysterical tics, 2 typical hysterical monoplegias, 5 deaf-mutes, and 1 hysterical somnambulism. Cases 38 and 101 are examples of those in which the psychic trauma appears to me to be more important than the physical trauma. In both unconsciousness was momentary at most, so that physical trauma must have been slight.

CASE 38.—Lieutenant ——, aged 24. The patient came out at the start of the war and went through Mons and Le Cateau. On the Aisne an 11-inch shell landed in his trench—"One man was simply blown away, and four others were done for." The patient was "knocked out" for some seconds only. After this incident he started sitting up in his dug-out night and day, thinking of high-explosive shells, and gradually getting exhausted and depressed. After about three weeks of this he was sent home, and he remained in a more or less neurasthenic condition until sent out to France again in February, 1915, staying at a base camp until seen in March. When seen he was still in a neurasthenic condition and complained that he was still dreaming about the shell incident, "seeing the man blown up—and the trench, as it was, like a butcher's shop."

CASE 101.—Sergeant ——, infantry, aged 28. Past and family histories negative. The patient had been nine months at the front, and had been through Mons, &c., but he kept quite well until about three weeks ago. "Twenty-three days ago I was issuing rations when they got the range of us—and killed the other chaps. I got blown away and knocked over. I saw everything—fellows in pieces. Then a second shell came. I got lifted and knocked about 10 yards." The patient started shaking after this, and felt "all to pieces," but carried on his duty. Two days later "shells dropped on the dug-outs and killed the other chaps. I have not slept properly since this. If I go to sleep, I wake up seeing people killed, shells dropping, and all kinds of horrid dreams, all about war." Usually in these dreams patient saw the above men again, and awoke with a start and shaking. One or two of these men had been "pals." General asthenia and mental depression were marked, and he suffered from attacks in which he "burst out blubbing

[3] Note on the Causes of Death due to High Explosive Shells in Unwounded Men, Brit. Med. Jour., Sept. 18th, 1915, p. 450.

[4] F. W. Mott: The Effects of High Explosives upon the Central Nervous System, THE LANCET, Feb. 12th, 1916, p 331.

like a child." Over a fortnight after the first incident, while he was in a base hospital, "head-shaking" commenced. On examination the patient was found to be in a state of nerve tension, jumping at the least sound. He had spasmodic tic movements, causing extension of the head with protrusion of the lower jaw and contraction of the occipito-frontalis muscle. At times the muscles of the left shoulder-girdle were similarly affected. Slight fine tremor was present in the hands and eyelids, and there was difficulty in keeping the eyes fixed on an object. Sight and hearing were normal and his intelligence above normal.

To sum up these 52 cases which had possibly been exposed to the physical effects of explosion, there are only 5 (3·5 per cent. of all cases of shell shock) in which the evidence, being negative in other respects, favours physical concussion as the cause of the subsequent neurosis. Even in these it is possible that psychic shock preceded loss of consciousness or that true loss of consciousness never occurred. (See Cases 25 and 141.) We may conclude that physical concussion occurs in but a few cases of shell shock; in these it is not severe in degree, and plays but a small part in the production of symptoms, being comparable to, and in most cases of no more importance than, the minor injury in cases of traumatic hysteria of civil life.

3. *Possible Chemical Causes.*

Absorption of toxic gases generated by shell explosions.—Mott[5] has discussed the possibility of carbon monoxide poisoning and the effects which it may produce on the nervous system. In an individual case it is impossible to estimate whether such poisoning has taken place or not, because no clinical notes are brought from the front; but the fact that the wounded do not suffer from "shell shock" proves that gas poisoning cannot be more than a very rare and exceptional cause of this condition. Only three of my series of patients (2·1 per cent.) complained that they had been poisoned by "shell gas." There was no evidence to indicate the nature of the gas or that carbon monoxide was present, and it is noteworthy that the elements of psychic terror and very slight physical injury were present in each case.

CASE 68.—Rifleman ——, aged 24. Past and family histories negative. The patient had been in the firing line for six months and had kept quite well, having no nerve trouble until Hill 60. His regiment was going up the hill at night, to relieve those holding it, when it came under heavy fire from "gas shells, like mustard and cress." The patient, being in the reserve company, was in a dug-out for a short time, but later started up the hill again under heavy shell fire. On the way up, six shells pitched near together, and he was knocked over and half buried in dust and débris. He was "gassed and dazed," but not "stunned." He got into a dug-out and then could not control himself, lying down with shaking all over which he could not stop. Slight shaking had persisted ever since. He suffered from headache for the first 48 hours only after the above. He complained of feeling depressed and that his sleep was spoiled by "awful dreams, practically always the same, of Hill 60. I can see it all, where we lost 30 or 40 men; they screamed and moaned, some with their arms blown off." The patient had not reported sick, but had been sent sick because of the tremor. On examination there were marked general depression and asthenia, and fine tremor of the hands. The knee-jerks were increased. Sensation was normal, and intelligence above normal.

CASE 107.—Private ——, infantry, aged 20. No past and family histories of nervous nature remembered, but memory not good. The patient was quite mute, but understood questions and replied in writing. He had been at the front for three months, keeping quite well until 10 days ago, when "shells bursting near me and gas got into my lungs and made breathing very painful. One piece of shell, or stone, struck me in the side, and I did not remember any more until I found myself in the dressing station." Since this he had been quite mute, depressed, miserable, and had suffered from constant frontal headache. His sleep was poor owing to dreams. "I dream about as if there was always someone trying to shoot at me, and always shells bursting near me, and it seems as if I cannot escape from that gas." On examination there was fine tremor of the hands and the patient was quite mute. Hearing, intelligence, and writing power were quite normal. When asked a question he wrinkled his forehead and appeared to think hard, but the lips and tongue remained unmoved, no attempt to articulate being made. Sensation and the reflexes were normal, and no contraction of the visual fields could be demonstrated by rough testing. Some tenderness was present over the eighth rib on the right side, about the posterior axillary line, the spot on which he had been struck, but there was no bruising or other sign of injury, and the lung and pleura were normal, so that the blow cannot have been severe.

CASE 121.—Private ——, infantry, aged 27. Past and family histories negative. The patient had been at the front for three months. A month ago he was slightly wounded, but the wound had healed and he had returned to the front. He was quite mute, but intelligent, communicating the following in writing: "We were on our way to the trenches, and as we were going through the railway cutting they started to shell us, with gas shells mostly, and we had not been there more than a quarter of an hour when I was compelled to lie down through temporary blindness and weakness through getting a dose of gas through my mouth and eyes. I was lying down for about ten minutes when a shell came somewhere near, and was struck by something in the face and on my left knee, and I remembered no more until I found myself in hospital. I was all of a shake, and while lying down would frequently jump up and wonder where I was." The patient had been quite mute and rather depressed since the above incident. He dreamed occasionally, always about fighting and bursting shells, but not in connexion with any particular incident. Fine tremor, present in the hands, could be controlled by will, but was apt to be worse in the quiet of the night. The knee-jerks were markedly increased. There was difficulty in fixing the eyes on lateral deviation. Slight deafness in the left ear was accounted for by chronic discharging otitis media, with an old perforation of the membrane. All other signs were negative, there being no evidence of injury on the face or knee.

The psychic stimulus of terror was present in all three of these cases, reinforced in Case 68 by horrible sights. Cases 107 and 121 both lapsed into prolonged unconsciousness immediately on receiving blows of such trivial nature that they caused no signs of physical injury and in such positions that concussion would be unlikely to ensue. The coincidence of loss of consciousness with the moment of injury and the fact that it was sudden render it highly improbable that it was due to gas poisoning. It is fair to infer that these men were in a condition of psychic tension in which they could have been knocked down by the proverbial feather, and that the effect of the blows was psychic rather than physical.

A consideration of the psychic causation of these cases, in conjunction with the absence of shell shock from amongst the wounded, compels us to the conclusion that chemical poisoning by shell gas cannot be more than an exceptional cause of "shell shock."

4. *Possible Psychic Causes.*

(*a*) *Gradual psychic exhaustion from continued psychic strain.*—(1) As a predisposing cause. The degree to which continued psychic strain will predispose to shell shock is most difficult to estimate. Most of my patients claimed that they had kept perfectly well up to the time of the causative incident, but some admitted that they had felt the strain on their nerves. Definite statements concerning family and past histories were obtained from 129 patients. Of 78 who denied having felt the gradual strain 46 were free from all neuropathic taint, whereas of 51 who confessed they had felt the strain only 8 were free from this taint. It is certain that continued psychic strain is much more potent as a disposing cause in those of neuropathic predisposition, and I think that it must also have exerted a similar influence in a large number of those who were unconscious of its action.

(2) As a cause of neurosis *per se*. In a few cases the "shell shock" had been gradual in onset and, as far as could be ascertained, due solely to the continued psychic strain of the anticipation, or presence, of danger. Two patients broke down immediately on reaching the trenches, though neither of them had actually come in contact with danger. One confessed to a previous nerve collapse in civil life, and that he had begun to feel "queer" on the journey to France; the other had always been "timid," and he collapsed at once from the sound of the guns. These are simple examples of anticipatory terror acting on neuropathic men.

Of 13 men in whom the continued psychic strain of trench life appeared to be the sole cause of breakdown only 2 were free from neuropathic predisposition. Four gave both personal and family histories of functional nervous trouble, 5 gave positive family histories only, and 2 positive personal histories. The two men who were free from neuropathic taint had stood trench life for eight and six months respectively, whereas the "sticking period" for the neuropathic cases averaged two and a half months, the longest

[5] Op. cit., Feb. 26th, 1916, p. 441.

being five months. In all these continued psychic strain cases the resultant neurosis was of asthenic type. Weakness, loss of energy, mental depression, and poor sleeping were prominent symptoms. Some were apprehensive and fearful, and most showed fine tremor and increase of knee-jerks.

This group of cases shows that continued psychic strain is not likely to produce a nervous breakdown *per se*, except in the case of individuals of neuropathic predisposition. In the resulting type of neurosis, the group also forms an interesting contrast with another group of six cases in which, although the nervous condition was gradual in development, it appeared to be caused by a special incident. In this latter group neuropathic predisposition was much less common, and the resultant nervous affection was of hysteric rather than asthenic type. Most of these patients showed marked tremor, 1 suffered from waking hypnoidal states, 1 from hysterical somnambulism, 1 from hysterical paraplegia, and 1 from hysterical hallucinations of smell leading to hysterical vomiting. The last case is worth recording as the only one in which a symptom connected with the sense of smell occurred, and also as an example of the manner in which the story of psychic strain is partly repressed by the patient.

CASE 146.—Lieutenant ——, infantry. Past history negative. Family history nil, except mother of nervous disposition. After the patient had been at the front for three and a half months he started vomiting everything he took. This vomiting resisted treatment at the front, and a fortnight later he was transferred to a base hospital as a case of gastritis. There was no gastric pain, except such as occurred with the strain of vomiting, and physical examination of the alimentary system was negative. In the course of examination he also complained of his nerves, the latter taking the form of sleeping badly owing to dreams "about trench life at the front, of coming across something awful and burying it, of burying dead." He used to wake suddenly from these dreams, sweating freely. It was obvious that these dreams were important because the patient was manifestly unwilling to refer to them, and became emotional on doing so. Further questioning elicited the fact that he had been very much upset by having to supervise the burial of a large number of decomposing bodies, and that after this incident he had been haunted by, and unable to escape from, "that awful smell of the dead." He had developed waking states of mental abstraction in which he kept going over the burying experience again and again; he had lost the power to concentrate his attention on anything else, and suffered from emotional attacks of crying when by himself. Finally it was evident, and the patient himself admitted, that the vomiting was simply secondary to the hysterical hallucination of smell.

We may conclude that gradual psychic exhaustion from continued psychic strain is an important causative factor in cases of shell shock, particularly in individuals of neuropathic predisposition. In these it may suffice *per se*, the resultant neuroses being of asthenic type. Cases of gradual development caused by a special incident differ in the fact that the resultant neurosis is usually of hysteric type.

(*b*) *Sudden psychic shock.*—In most cases of shell shock the immediate cause of the nerve collapse is to be found in some sudden psychic shock. The various events which may produce such sudden shock are (1) horrible sights, (2) losses, (3) fright from an explosion, or (4) sounds. From the nature of the case it commonly happens that two or three of these factors are combined in the production of psychic shock, making it difficult to apportion the measure of blame due to each; but I think that anyone who has questioned a large number of these patients must have become deeply impressed by the critical influence exerted by horrible sights.

(1) *Horrible sights.*—While the histories of 142 patients reveal that horrible sights formed a definite causative factor in 51 cases, and a probable factor in 13 more, it is certain that these figures are far below the true mark, owing to the remarkable repression of memory which takes place in connexion with sights. In some instances sights are completely obliterated from conscious memory (see Cases 25 and 141), and in others this obliteration is partial, the patient striving to keep the sight memories from re-entering his own consciousness and reaching that of his questioner. (Memory in dreams only, unwillingness to talk about these incidents, with emotion on doing so, &c.—Case 126.) I became convinced that the more a memory was repressed the greater was its significance in respect of the cause of the nervous condition, and, as far as I could ascertain, this repressive tendency was mainly concerned with memory for sights, from which, indeed, it was rarely altogether absent. Almost without exception men confess that they hate and fear shell fire, and I think that the self-control which enables them to endure it is largely due to the fact that full realisation of its horrible possibilities is not acute or clear in their minds. This deficiency of realisation may be partly conscious, a refusal to think, and partly unconscious, a negative gift of nature. Throughout life nature disarms our most trying moments by withholding acuity of realisation, and thus preventing psychic strain from attaining sufficient strength to break our nervous resistance. It may be that horrible sights are potent to cause shell shock because they convert a poorly imagined blurred picture, into a real picture acutely focussed, a half realisation into a full realisation, the latter being too powerful for nerve resistance to withstand. Cases 25 and 141 are examples of complete obliteration of sight memories, in which, however, the memory of the explosion is retained.

CASE 25.—Private ——, R.A.M.C., aged 19. Notes from field ambulance: "Private —— was close to a shell which burst among a company standing in the road, killing 20 and wounding 20 others. He worked well in assisting the wounded, and then proceeded to clear up the fragments of the killed. Whilst doing this he suddenly lost his mental balance, and has been in his present state nearly 24 hours. He has been given bromides." Notes by another medical officer attached to the same field ambulance: "This man is suffering from mental shock caused by having to clear away the remains of a number of men killed by a shell. He does not recognise his friends, and at frequent intervals has periods of terror, exclaiming 'Cover it up.' He is sleepless (without drugs). He takes food badly. He is possibly suicidal, or may become so." The patient's own story was that he had been at the front for four months and had kept quite well. After a day or two of heavy work under shell fire he remembered being on the La Bassée road with the troops. "And I remember the crash of some shot and a shell burst, I think, and I can't remember anything more until I woke in the morning in the train. [This must have been at least 48 hours later.] I can only remember the noise and I think men calling out." The patient's intelligence and his memory for all events previous to the above were excellent. On admission to base hospital the same day that he "woke" in the train he complained of feeling "swimmy in the head, as if expecting something, something seems to be coming, as if something going to happen, something nasty, when I hear anything like the whistle of a shell coming towards me." There was no tremor; in fact, physical examination of the nervous system was negative in every respect.

The above case is an example of complete amnesia dating from the moment of explosion. It illustrates the immense value of a note from the medical officer at the front. Without such a note the case would have been included with those which, failing other evidence, have been put down as possibly due to physical concussion.

CASE 141.—Sapper ——, R.E., aged 25. The patient was admitted to a base hospital in a semi-stuporose state. He would not answer questions and mistook the identity of those around him. He slept most of the first day in hospital. The next day he was a little better, recognising to some extent that he was in hospital and that the orderlies and patients were not his old friends. He complained that his mind was "all of a blur." He did not remember coming to France, saying "it all seems a mist." He wandered from one subject to another but recognised that he was ill, was afraid of becoming insane, and wished to be better. There was some coarse tremor of the hands, but all other physical signs were negative. Later the same day he complained of not sleeping and not knowing whether he was dreaming. At intervals over a period of about half an hour, helped by questions, he ejaculated the following with much emotion—"Joe, don't go—Give me my rifle—Joe—Ten killed—Poor old Taffy—Dreamt last night—Saw Harry Edmunds with all his ribs broken—When we had the explosion—5000 bombs, or two and a half tons of explosives, blew up—Joe—Clay said he'd never live three weeks—Glasses blown in—Taffy killed by shell in stomach—S —— L —— all privates blown off him—Just after leaving workshop." At times, between the above statements, patient went into short trance states, staring and pointing out of the tent, being impervious to questions and difficult to bring round. It was evident that he had been in an explosion incident in which many of his friends had been killed and mutilated, but in which he himself had escaped physical injury, remaining all too conscious of what was taking place. The next morning I found him in a condition of cheerful emotion, saying that he was ever so much better and that the orderly had "saved" him. It appeared that the orderly had taken him to the Y.M.C.A. recreation tent, played the piano to him, and made him play himself, whereupon his

whole conscious field had suddenly changed over, the patient becoming an intelligent, cheerful, but emotional man, with good memory for everything previous to his reaching France, and memory of the simple fact of an explosion, but nothing more. On taking him through the names mentioned above he remembered them all, saying that the men had been in his company. He did not remember anything connected with them in France. When asked where these men were he said that he did not know, but he was not in the least anxious or bothered about them.

This case is not unlike Case 25, showing almost complete dissociation of consciousness. In the first phase after the explosion almost everything was obliterated from memory except the losses and sights connected with it. In the second phase everything that had occurred after arrival in France was obliterated except the solitary fact that an explosion had taken place. The case would have been included as a possible physical concussion case by anyone who had not seen or received notes about the patient in the first phase.

An example of partial repression of memory for sights is seen in Case 68 quoted above, and the following case is of similar nature.

CASE 126.—Private ——, infantry, aged 24. Admitted to hospital complaining of sleeping badly, pains in the head, and inability to settle to anything. Family history negative. Past history: A previous attack of neurasthenia, caused by worry, in civil life. The patient had been at the front for over four months, and had kept perfectly well until he was slightly wounded in the tongue and mouth on May 4th, 1915. On the same day his brother was killed beside him. The wound had healed in a week, and the patient was transferred to a convalescent camp. He stated that he had been worrying about his wife for some time, but there was no reason for this, and it appeared to be symptomatic rather than related to the causation of the nervous condition. He remained in the convalescent camp for three weeks, keeping perfectly well except for slight headache which was increased by physical exertion. Two days before admission to hospital he remembered getting out of bed in the convalescent camp and then nothing more until he "woke" in the camp sick room. He was told that he had been found lying down in the camp, holding his hands to his head and talking about the trenches. When questioned about his sleep he answered that it had been very bad since the day he was wounded owing to horrible dreams which woke him with a start and shouting. The account of these dreams was only obtained with difficulty, the patient being most unwilling to speak of them, and breaking down with emotion on doing so. The incidents which recurred in the dreams were—"My brother shot—Men with their heads blown off—A pregnant woman caught in the stomach by a shell, the child and her bowels dropping out." These sights recurred again and again, not only in dreams, but also in waking states of mental abstraction. On examination the patient was found to be depressed and quietly emotional, but physical signs were negative, except for slight increase of knee-jerks and some fine tremor of the hands.

(2) *Losses.*—Losses help to cause shell shock in somewhat the same way as sights. The effect does not depend upon simple numbers, but upon clarity of realisation, a few losses, or even a single loss, clearly seen, or including friends or relatives, being much more potent than large general losses. In the case of a few losses clearly seen horror is added to terror, and if friends or relatives are affected these feelings are intensified and grief is superadded. Examples of the adjuvant causative action of losses are seen in Cases 38, 101, 68, 25, 141, and 126 quoted above.

(3) *Fright from an explosion.*—Simple fright from being near a shell or bomb explosion may suffice to cause shell shock by itself, but in most cases the additional fright due to partial or complete burial, or to other psychic factors, has been present as well. All my cases of burial were included in the consideration of possible physical concussion, and need not be referred to again here. In the following case, simple fright produced by a neighbouring explosion was the only apparent cause, and it is worth noting that the man was a neuropathic subject.

CASE 109.—Sapper ——, aged 19. Family history: Mother "nervous." Past history: Two years ago patient had an attack similar to the present one. It was caused by overwork, in no way connected with accident or fright, and resulted in his being away from work for five months. He had kept quite well at the front until ten days ago. Then, while he was in a dug-out, one shell pitched on top of the bank above it, and was followed a moment later by another shell which burst in front. These did no damage to the dug-out, except to cause a slight falling in. The patient stopped there and carried on with his duty that night, but he reported sick next morning, feeling very queer, and shaking slightly above the waist. He could remember getting half-way down the road to see the medical officer, but nothing more until he "came to" in the dressing station. This may have been about two and a half hours later, and he thinks that he had been found in a fainting condition on the road. After two days in hospital he was transferred to a convalescent camp, but later was readmitted to another hospital. He complained of "twitching" ever since reporting sick, and occasional slight frontal headache. He suffered from "funny feelings" at night, preventing sleep—e.g., "A man was over my head with a mallet, going to hit me." He also complained of "sort of dreams; there is somebody above me all the time." On examination there was constant tremor of both arms and slight tremor of the head and tongue, and jerky movements of the eyes. There was some spasm of the right leg, and both legs reacted to examination by violent tremor. Sensation was normal. The excitement of examination produced free sweating.

In this case physical concussion and gas intoxication are negatived by the trivial injury to the dug-out and the complete absence of immediate symptoms.

(4) *Sounds.*—Simple noise does no more than exert a slight adjuvant action in promoting psychic shock, and this action appears to be limited to the cases of a few men of neuropathic nature. As mentioned above, the sound of our own guns formed the final stimulus in one "anticipation terror" case. The following case is another example of noise as an adjuvant cause.

CASE 96.—Lance-Corporal ——, aged 36. Family history negative. Past history: Nerve debility four or five years ago, caused by overstudy of music. The patient did not have to stop work, but suffered from depression, anorexia, and insomnia for a period of 11 weeks. He was at the front for about four weeks, and got on well until one day when eight shells pitched near him. He was not hurt in any way, but after this he suffered from anorexia, insomnia, and depression. Twelve days later when billeted near some English artillery these guns were heavily engaged. No shells dropped near, but "the noise properly finished me off." Since that time the insomnia, depression, and anorexia had been more marked. Dreaming had not occurred, but the patient had not slept unless heavily drugged. His general condition was one of neurasthenia, and the insomnia was found to be real and difficult to combat.

These cases show that the psychic trauma of acute fright will cause shell shock. Sounds exert but a feeble action in the production of fright, and simple nearness to a shell explosion is not often sufficient by itself; but when an explosion causes burial of the individual, or mutilation of others, the intensity of terror or summation of terror and horror produced is often sufficient to break through the bounds of psychic resistance and lead to nervous collapse.

5. *Causes of Relapse.*

A consideration of the frequency and causes of relapse throws some sidelight on the general etiology of shell shock. Of the series of 150 cases no fewer than 41 (27·3 per cent.) were first seen by me when in a condition of relapse. These patients had been treated in other hospitals, transferred to convalescent or base camp as fit, or nearly fit, to go to the front again, and subsequently admitted under my care for nervous symptoms occurring in these camps. It may be assumed that the original condition of these patients had appeared slight and of little moment, but careful investigation revealed that they had never completely lost their symptoms. No less than 72·2 per cent. were of neuropathic predisposition. In most cases it was evident that the immediate cause of the relapse was the psychic strain of fear at having to go to the front again, and in some symptoms did not recur until they were actually starting for the front. This percentage of relapsed cases is greater than could be expected if the cause were an original finite physical trauma, but it is no more than we ought to expect in the case of an original trauma of psychic nature, and so still capable of conscious, or unconscious, action and reinforcement.

The general evidence shows that physical and chemical events can have exerted a causative influence in few, if any, cases of shell shock, the vast majority being certainly due to psychic trauma. To connect such psychic trauma with a "sex complex" is impossible.

It may be said that if psychic trauma be the cause of shell shock the wounded should suffer from it as much as the unwounded. That they do not do so is a well-established clinical fact, showing that shell shock and a definite wound

are to a large extent incompatible. It seems that the physical trauma of a wound tends to neutralise the psychic trauma which precedes or accompanies its production. In the case of a seriously wounded man psychic perception is blunted, or even completely suspended, for the time being. In the less seriously wounded attention is for the time being directed to the wound, and though acuity of psychic perception cannot be much blunted, it is diverted or side-tracked to such an extent that but little remains to trouble conscious memory. Further, the wounded man has something to show for his pains and discomfort, and a certain passport to immediate freedom from danger. In this manner the action of the psychic trauma is so much reduced that it lacks the intensity necessary to produce the conditions known as shell shock. I doubt, however, that it is entirely destroyed, and think it may manifest its presence later in promoting late nerve exhaustion or by predisposing to subsequent neuroses from other stimuli.

Conclusions.

1. The wounded are practically immune from shell shock, presumably because a wound neutralises the action of the psychic causes of shell shock.
2. Exposure and hardship do not predispose to shell shock in troops who are well fed.
3. While it is theoretically possible that physical concussion resulting from a shell explosion might cause shell shock, it is certain that this must be regarded as an extremely rare and unusual cause.
4. Chemical intoxication by gases generated in shell explosions cannot be more than a very exceptional cause of shell shock.
5. Gradual psychic exhaustion from continued fear is an important disposing cause of shell shock, particularly in men of neuropathic predisposition. In such subjects it may suffice to cause shell shock *per se*.
6. In the vast majority of cases of shell shock the exciting cause is some special psychic shock. Horrible sights are the most frequent and potent factor in the production of this shock. Losses and the fright of being buried are also important in this respect. Sounds are comparatively unimportant.
7. A consideration of the causes and frequency of relapses favours an original cause of psychic nature.
8. Any psychic shock or strain may cause a functional neurosis, provided it be of sufficient intensity relative to the nerve resistance of the individual. Such shock or strain need not have any connexion with "sex complexes."

Welbeck-street, W.

FAILURE OF THE RIGHT SIDE OF THE HEART AS A RESULT OF EXTENSIVE PULMONARY DISEASE.

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TWO recent cases under the care of my colleague, Mr. H. Morriston Davies, at University College Hospital, both of which he very kindly asked me to study, led me to write a short paper upon the subject of this title. This consequence of pulmonary disease, I am aware, is one that has been recognised for many years, but the more intimate details which recent research upon heart disease has elaborated, and the forward progress of the treatment of pulmonary affections, seem to justify once more some observations upon the clinical symptoms. Accordingly, I will not delay with any minute description of the two cases in point, but, after alluding to the features which had attracted our attention, turn to the general consideration of right-heart failure secondary to extensive pulmonary disease.

The first case was a young woman suffering from chronic pulmonary tuberculosis. The second was a small boy with extensive pulmonary sclerosis and bronchiolectases. In both, with considerable rapidity, a change had taken place in the clinical picture. *The pulmonary condition had fallen into the background, and a series of symptoms, apparently cardiac, had become predominant.* Dyspnœa had increased, a very striking lividity of the whole integument, and notably of the face and extremities, had become permanent, dropsy and ascites had attained a high grade, and the liver in both cases was greatly enlarged. Venous engorgement was conspicuous, but the pulses—a point of importance—though strikingly rapid (120–140 per minute), were not arrhythmic; and the quantity of urine passed was considerable. These, together with a tricuspid systolic murmur, were the features which attracted attention and made it clear that some very definite change had taken place in the course of these illnesses.

It is some 20 years ago since Dr. Cheadle first directed my attention to this clinical phenomenon exemplified in a boy aged 14 years who had never suffered from heart disease, but had for years been the victim of severe bronchitis and emphysema. This patient also showed striking lividity and had developed extreme ascites and dropsy, with great enlargement of the liver and a rapid pulse. Dr. Cheadle then pointed out the predominance of the cardiac symptoms, which, he impressed upon me, had altered entirely the clinical appearance of a case that in previous years had been wholly pulmonary in its behaviour.

In April, 1916, Lutembacher, from the clinic of Professor Vaquez, published an admirable paper upon this same sequence of events, and to this paper, based upon a number of observations, I am indebted for further assistance in obtaining a clear conception of the sequence of events.

Failure of the right side of the heart may, as we know, occur under various circumstances. The most frequent cause is undoubtedly an organic mitral lesion, but among others it may result from a pulmonary stenosis or organic disease of the tricuspid valve. Rupture of an aortic aneurysm into the pulmonary artery is yet another though rare cause of this failure, as also primary sclerosis of the pulmonary arteries. The group before us, however, is the result of primary disease of the lungs, whether tubercular or due to non-tubercular cirrhosis of the lungs, or again to bronchitis and emphysema or carcinoma. In each case the essential lesion is a damage to a large area of the pulmonary circulation, not at its fountain-head, the pulmonary artery, but at the periphery as the result of the extensive chronic disease of the lungs. An outstanding feature of such cases will be that the cavity of the heart to feel the strain first is the right ventricle, the left side escaping, and accordingly we find certain peculiarities in the clinical symptoms.

The clearest example of the gradual evolution of primary failure of the right side of the heart is provided by such a lesion as pulmonary stenosis. The picture is not so obvious when the primary lesion is an extensive disease of the lungs and the course is not so simple. In pulmonary stenosis we find the right ventricle hypertrophying, and for some years this effort may prove successful; then signs of failure begin to appear. A triple rhythm may possibly mark the stage of transition; later all the signs of failure develop step by step. When, on the other hand, pulmonary disease is the cause, complete examination of the heart may be made difficult by emphysema, and further, while the right ventricle maintains its efficiency our attention is naturally directed to this pulmonary disease. It is only when cardiac failure supervenes that we are attracted to the minute study of the heart. Nevertheless, in this group, as in pulmonary stenosis, we recognise this common feature, the comparative integrity of the left side of the circulation.

If, then, we summarise some of the striking features of this group we find the following are the most important:—

1. A comparatively abrupt change in the appearance of the case from a pulmonary to a cardiac aspect. This is the most characteristic of all the features, for in cases of organic valvular disease of the right side of the heart the condition is throughout one of cardiac disease passing gradually from the stage of compensation to that of failure. On the other hand, when the cause of failure is due to organic disease of the left side of the heart, evidence of failure of the left side *precedes* the failure of the right, and though the lungs must suffer in this change the case is clearly a cardiac one throughout.
2. Great and general lividity. This symptom at once attracts our attention, and at the first glance suggests the "morbus cœruleus." The explanation is clearly dependent upon the diminished oxygenation due to the damage to the pulmonary circulation, the pulmonary disease, and the failing power of the right ventricle. It is a lividity not only of the face and extremities but also of the whole skin.
3. Great venous stasis and engorged jugulars. The latter sign leads to a short consideration of the venous pulse in these cases. Recent years have shown us that the character

of the venous pulse in the neck is primarily dependent upon the auricular part of the heart. If in mitral stenosis auricular fibrillation occurs, the *a*-wave necessarily vanishes, and if there is also much tricuspid regurgitation the ventricular pulse is established. In these cases, however, the strain falls first upon the right ventricle, and the right auricle may continue to contract actively, in fact with increased vigour, with the result that the *a*-wave, far from disappearing, may become more evident. The ventricular pulse, dependent as it is upon an inert auricle and tricuspid regurgitation, may not for the same reason appear. In other words, the particular venous pulse that may be found in these cases will depend upon the condition of the right auricle, which we must recognise may be working hard and far from a state of fibrillation.

4. Absence of conspicuous arrhythmia of the heart and pulse. These features were well illustrated in both the cases. In these the pulses, though strikingly rapid and small in volume, were very different from those we meet with so frequently in mitral disease with failure of the right side. In the last stages arrhythmia may supervene, but even this is not constant.

5. Associated with the preceding feature is the passage of a fair quantity of urine. This points also to the comparative integrity of the left side of the heart. In such a grave condition the urine is albuminous, and in the final stages renal stasis may supervene.

6. Great enlargement of the liver is the immediate result of the failure of the right side of the heart. In the tubercular cases the supervention of hepatic tenderness with enlargement deserves attention, for experience has shown that though enlargement of the liver is frequent in the tubercular, the increase is, as a rule, due to fatty change, and is not painful. The tenderness points to the rapid congestion of the liver.

7. Together with this symptom come those of ascites and œdema, which may be very extensive.

8. A tricuspid systolic murmur is detected on auscultation. The maximum is low down over the ensiform cartilage and its intensity varies. The presence of this murmur and the absence of others will afford strong support to the diagnosis that the failure of the right ventricle is secondary to primary disease of the lungs.

9. The results of radiographic examination. (*a*) It is seen on the screen that the enlargement of the heart is asymmetrical owing to the disproportionate size of the right side. The outline is not so circular as in failure the result of mitral disease, and the transverse measurement not so great. (*b*) The left border of the outline is not so circular as in mitral disease with failure of compensation, but makes an obtuse angle, the apex of which is formed by the junction of the upper limb constituted by the left ventricle with the lower formed by the right ventricle. (*c*) Lutembacher directs attention to the effect of the cardiac contraction in this condition. This uncovers from the shade of the diaphragm all the lower border of the right ventricle.

10. The pulmonary signs are extensive, for not only are there those which result from cardiac failure, but in addition, and more important, those which have been the primary cause of the failure.

When in a case of severe pulmonary disease this stage of cardiac failure appears the outlook is unfavourable and life may drag on for only a period of months. Dyspnœa, except when at complete rest, is persistent and progressive. The general venous stagnation makes the digestion difficult, vomiting frequent, and absorption imperfect. The high degree of cyanosis produces mental lethargy and actual somnolence. Death occurs from asphyxia with or without pulmonary hæmorrhages and infarctions, and in addition the original pulmonary disease may spread locally, or if tubercular disseminate to other organs.

It is very striking how after a brief and partial effect the cardiac tonics, such as digitalis, entirely fail to slow the heart or influence the dilatation.

The *diagnosis* of this form of cardiac failure is clearly one in which an accurate knowledge of the patient's history and a broad survey of the entire illness are indispensable. Considered apart from these essentials it is possible for several somewhat similar conditions to occur—for example, congenital heart disease, right heart failure secondary to disease on the left side, adherent pericardium strangling the heart, aneurysm of the aorta rupturing into the pulmonary artery, arterio-sclerosis of the branches of the pulmonary artery, failure of the right side of the heart prior to the failure of the left in chronic hypertension. In practice much difficulty will be avoided when we bear in mind that pulmonary disease occupies all the earlier history of this group of cases, that rheumatism takes no part, and that radiography will exclude the existence of an aneurysm. Aubertin and Girou's remarkable case of primary arterio-sclerosis of the pulmonary vessels showed symptoms similar in character, but there was no gross pulmonary disease, the lesions lying in the artery walls themselves.

The clinical picture of polycythæmia rubra lacks the great œdema and ascites and is usually a very different one, but one case under my observation deserves a brief description.

A man, aged 47, came to my out-patient department in December, 1914, for an opinion upon the condition of his chest, stating that for some months he had lost flesh and had coughed up blood-stained expectoration. Both upper lobes of the lungs were deficient in resonance and the air entry singularly deficient, but there were no moist sounds audible. My attention was attracted to his leaden-blue colour and to a definite enlargement of his spleen, and the possibility of polycythæmia rubra suggested itself. The blood count showed 6,800,000 red cells, with hæmoglobin 140 per cent. Repeated examinations of the sputum for tubercle bacilli were negative, and the X ray picture threw no light at all on the condition. I tried the effect of small doses of thyroid extract, then calcium lactate, and finally quinine and iron. After six weeks' stay he left hospital but still kept under my observation. His blood had been much improved by the quinine and iron. His colour was much less leaden and the red cells only numbered 5,610,000; hæmoglobin 120 per cent. In other respects he was no better; he still coughed up blood-stained sputum and complained of a stuffy sensation in the chest, and had lost weight. Four weeks later a striking change occurred in the physical signs in the development of complete dullness over the right side of the chest with much increase in the dyspnœa. The absence of any evidence of tuberculosis, coupled with the general trend and symptoms of the case, strongly suggested the presence of a neoplasm. Two pints of blood-stained fluid were withdrawn with passing relief, but death occurred on March 4th, 1915, after the appearance of thrombosis in the right femoral vein and pericarditis. The post-mortem examination showed primary carcinoma of the right bronchus spreading into both lungs, and involving the liver, suprarenals, and pericardium.

This case showed a remarkable combination in the occurrence of pulmonary symptoms with lividity and a high degree of polycythæmia, but the picture lacked entirely signs of right ventricle failure with the œdema, ascites, and great enlargement of the liver. In a second case of carcinoma of the lung the symptom of polycythæmia was present, but again the clinical picture lacked the signs of right heart failure.

The most real difficulty in diagnosis is the danger of focussing attention entirely on the pulmonary signs and attempting to explain all the cardiac symptoms as if they were pulmonary in nature under the hypothesis of a secondary toxæmia. Once more it may be repeated that the key to the solution lies in the change of the clinical picture from a pulmonary to a cardiac one. Examination after death demonstrates conclusively the nature of the cardiac lesion, for the right ventricle and auricle show extreme enlargement and the pulmonary artery itself may be considerably dilated.

I have ventured to dwell upon this condition because in recent years thoracic surgery has made important progress, and it may be helpful to call to mind this train of symptoms once more. For example, I would cite the operation for artificial pneumothorax in tubercular disease of the lungs, for there are many records of striking successes in suitably chosen cases. This point, however, we have to bear in mind, that in this particular endeavour to arrest the tubercular process it is unavoidable that for a time we put out of action a considerable portion of functioning lung, and in so doing must then disturb the balance of the pulmonary circulation and probably throw some considerable strain on the right ventricle. No doubt the balance is quickly adjusted, but it is possible that in a weakly subject the reserve power of the right ventricle may be rudely shaken and secondary heart failure encouraged. The surgeon has not only to consider the pulmonary lesions—often in themselves formidable enough—but the condition of the heart, and, indeed, the entire constitution, of his patient lest in benefiting the primary lesion he strike a serious blow to the all-important reserve power of the right heart and precipitate this form of cardiac failure.

Devonshire-place, W.

THE EFFECT OF FERRIVINE AND INTRAMINE ON SYPHILIS.

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IN view of the claims which have been advanced for the action of ferrivine and intramine on syphilis, the following account of a test which we recently made of these compounds may be of interest.

The biological and chemical hypotheses which have led Mr. J. E. R. McDonagh to consider di-ortho-amino-thio-benzene and tri-para-amino-benzine-ferric sulphonate (intramine and ferrivine) to be specific remedies against syphilis, have been discussed by him in recent papers, and we do not propose to deal with them here. For our purpose it is necessary to mention only Mr. McDonagh's main conclusions regarding the biology of the micro-organism of syphilis and the modes of action of antisyphilitic remedies.

As to the biology, Mr. McDonagh described in 1912 a life-cycle of the micro-organism of syphilis, in which it was asserted that the spirochæta pallida is not the cause of syphilis, but only the male phase of its micro-organism, which he called "the leucocytozoon syphilidis." The biochemistry of the various phases of this life-cycle and of syphilitic tissues as worked out by him has led Mr. McDonagh to the conclusion that Ehrlich was mistaken in considering that salvarsan acts by virtue of its parasitotropic effect; that, in fact, it acts by directly increasing the amount of active oxygen in the serum of the host and so increasing his resistance—an indirect and not a direct action on the parasite. According to this author, the active oxygen in the serum of the host can be increased directly by administering any strongly adsorbed metallic compound such as one containing iron or aluminium in trivalent form. In Mr. McDonagh's opinion it is not necessary, therefore, to use such a toxic metal as arsenic; iron will answer the purpose equally well. Hence his advocacy of ferrivine. According to Mr. McDonagh, ferrivine acts like salvarsan, and owing to its non-toxicity larger doses can be given, and they can be repeated at shorter intervals. Also, all these metallic compounds act only on the adult male phase (the spirochæta pallida) and the impregnated female. In the early stages of syphilis one commences treatment with a metallic compound, either ferrivine or salvarsan. In the later stages one commences with a compound which increases the active oxygen in the serum indirectly. Hence the introduction for this purpose of the sulphur compound di-ortho-amino-thio-benzene, or intramine.

We may say at once that we have been impressed by the fact that Mr. McDonagh's biological discoveries (published, as we have mentioned, in 1912) have not been publicly confirmed by any biologist of standing, although probably most biologists favour the idea that the micro-organism of syphilis has a life-cycle. Also, that eminent chemists have confessed themselves unable to understand his chemistry. Recognising that this might prejudice our practical tests of intramine and ferrivine, we have taken particular care to guard against their influence, cross-checking our observations and submitting them to others for confirmation or otherwise. Having been favoured with a supply of these compounds by the British Drug Houses, Limited, to whom we would here express our indebtedness, we chose for the test three ordinary cases of secondary syphilis, cases with well-marked lesions, the clinical progress of which could easily be watched, and from which it was easy to obtain specimens for microscopic examination. The details of the cases are as follows.

CASE 1.—Patient aged 27. Healed indurated frenal chancre of two months' duration. Anal mucous patch (dry). Pigmentation of macular rash still present on trunk. Mucous patch on upper lip; fauces ulcerated. S. pallida present. May 3rd, 1916: First injection 1 gm. ferrivine, diluted to 200 c.c. with distilled water. Vein washed through afterwards with normal saline. The patient became extremely collapsed on the table, with respiratory distress. Pain in epigastrium followed by repeated vomiting. Vomited during the night in the ward; slight rigor. Temperature 101° F. 4th: S. pallida still present in mucous patches. The patient had recovered from the reaction. 5th: Second injection 1 gm. ferrivine. Technique as above. The patient again became collapsed on the table and vomited. Profuse perspiration. Temperature 99·4°. 7th: Veins of both arms thrombosed. S. pallida still abundant in unaltered mucous patch on the lip. 9th: S. pallida still present. 10th: S. pallida still abundant in the morning. It was here decided to discontinue the ferrivine course, and 0·3 gm. salvarsan was administered without reaction. 11th: S. pallida disappeared from mucous patch (which has markedly altered in appearance) 18 hours after 0·3 gm. salvarsan injection. 12th: Mucous patch healed. No S. pallida found after a thorough search by different observers.

CASE 2.—Patient aged 25. May 1st, 1916: Multiple indurated ulcers in coronal sulcus of glans penis. Papular lichenoid syphilide, nape of neck, around elbows and over both hips (symmetrical). Also faint erythema. S. pallida present in chancres. No albumin in urine. First injection 1 gm. ferrivine solution diluted to 200 c.c. with distilled water. Vein washed through afterwards with normal saline. Severe reaction whilst on the table. Respiratory distress. Pain in epigastrium. Pulse very weak. Profuse perspiration. Vomited. Slight rigor at 6 P.M. Temperature 101·2° F. 2nd to 5th: S. pallida in chancres on daily examination. Vein thrombosed. Rash unaltered. Second injection of ferrivine 1 gm. on May 5th. Technique as above. Similar reaction and vomiting. Temperature 101·6°. 7th: 1 gm. intramine injected intramuscularly. 8th: Bad night, severe pain from intramuscular injection. Patient vomited during night. Temperature 101·6°. S. pallida still present in chancres which are not yet healed. 10th: Third injection 1 gm. ferrivine. Less reaction. Patient vomited in ward. Temperature 101·6°. 12th: Veins of both arms thrombosed. Cannot bear pressure at site of injection of intramine. S. pallida still present. 14th: Fresh papules appeared on both flanks. Snail track ulcers developed over right tonsil. S. pallida present in same. Both new lesions. Site of intramine injection very painful and swollen. 16th: Both fauces ulcerated. S. pallida present. Penis healing. Site of intramine injection painful, infiltrated and fluctuating in centre. 17th: Treatment with salvarsan and mercury commenced.

CASE 3.—Patient aged 39. May 2nd, 1916. Condition on admission: Large indurated mass at frænum under phimosed prepuce, duration approximately six weeks. Profuse papulo-pustular rash general. General adenitis. Anal mucous patch. Moist papules on scrotum and inner surfaces of thighs. Fauces ulcerated. No albumin in urine. S. pallida present in moist papules by dark-ground examination. 3rd, 3.30 P.M.: First intravenous injection 1 gm. ferrivine; solution diluted to 200 c.c. with distilled water, and vein washed through with normal saline. Whilst on the table patient exhibited sudden respiratory distress, with pain in the epigastrium, and turned an ashy-grey colour. The pulse became imperceptible and the patient broke out into profuse perspiration and was then violently sick. 6 P.M.: Rigor. Temperature 102° F. Vomited again; severe headache. Diarrhœa ensued during the night with persistent vomiting. The symptoms subsided on the following day. Temperature 99°. 4th: S. pallida still present in moist papules. 5th: Second injection 1 gm. ferrivine. Same technique. Similar reaction to above. Severe rigor at 6 P.M. Temperature 103°. S. pallida still present. Vein used at previous injection now thrombosed. 7th: 1 gm. intramine into gluteal muscles. "Rough night." Pain excruciating. S. pallida still present in moist papules. 8th: Site of intramine injection very swollen and tender. Marked œdema of lumbar region. Patient unable to lie on that side. S. pallida still present in moist papules. 9th: S. pallida still present. Patient somewhat more comfortable. 10th: Third injection ferrivine 1 gm. Reaction not so severe, but patient again vomited. Temperature 99°. 12th: Rash beginning to fade (nine days after first injection). Papules on scrotum still moist. S. pallida present. Site of intramine injection swollen and tender. Superficial veins of both arms thrombosed from insertion of deltoid to 6 inches above the wrists. 14th: S. pallida still present. 16th: S. pallida abundant in chancre. 17th: Site of intramine injections infiltrated and painful. Much albumin present in urine, with epithelial casts. Ulceration of fauces more marked. Treatment with salvarsan and mercury commenced.

From the above account it will be seen that the local and general reactions which follow the injection of these preparations are by no means pleasant. In the case of intramine the pain is undiluted torture, and lasts so for two or three days. One of us had previously treated four cases with intramine and the same local reaction occurred in these. In two of them abscesses have burst outwardly, one of which is

still discharging necrotic débris, ten weeks after the injection, and will take many more weeks to close. In those cases where no abscess has yet burst it is easy to feel by the gap in the muscles that considerable necrosis has occurred. None of these effects can be ascribed to sepsis, as most rigid aseptic precautions were taken. Further, particular care was taken to make the injections strictly intramuscular. The constitutional symptoms which follow immediately upon the injection of ferrivine are distinctly alarming, and such as would cause one to hesitate before injecting this remedy into any but robust patients.

As to therapeutic effect we found: 1. That ferrivine entirely failed to cause S. pallida to disappear from the lesions of three well-marked cases of secondary syphilis. 2. After the failure of ferrivine to cause the disappearance of spirochæta pallida from a mucous patch a single dose of 0·3 gm. salvarsan effected this in 18 hours, and the patch, which had hitherto been uninfluenced, had healed within 48 hours. 3. Clinically we were unable to detect any influence of either or both these compounds on syphilitic lesions, although each of them was of the variety which heals in a week or ten days under salvarsan treatment. 4. Further syphilitic lesions appeared immediately after the treatment in one of the two cases treated with both ferrivine and intramine. A mucous patch appeared on one tonsil as well as further syphilitic papules from which spirochætes were obtained. The other case developed nephritis, with albumin and epithelial casts, which was not present prior to the injections.

Our conclusions are (1) that intramine and ferrivine are extremely unpleasant in their effects, and (2) that they have no specific effect on early syphilis.

Since the above was sent in for publication we have treated the following case of tertiary syphilis which is of interest in connexion with this subject.

CASE 4.—Patient aged 39. Contracted syphilis four years ago. Commenced treatment during the secondary stage with mercury pills and mixture, and continued same for two years. Five weeks ago a gumma developed over the head of the left fibula.

On admission the patient had multiple gummata on each leg. Some could be felt as nodules in the muscles, some subcutaneous, and others in various stages of necrosis with resultant ulcerations. There was one large ulcer situated over the left popliteal space. The upper extremities, head, and trunk were unaffected except for one small gumma over the left lower ribs. The pupils reacted equally well to light and accommodation. Reflexes normal. Wassermann reaction positive. May 24th, 1916: 1 gm. intramine injected into the muscles of the left gluteal region. 25th: The patient passed a sleepless night from exquisite pain at the site of injection. Hot fomentations applied. 26th: Left buttock very tender, painful, and swollen. Morphia administered. 30th: Much œdema of lumbar cushion. No albumin in urine. Pain from injection less. Swelling more localised, and could be made to fluctuate. Gentle massage, followed by hot fomentations. Two gummata, which had not previously involved the skin, had now broken down, and were discharging through same. 31st: Two fresh gummata over the head of the right fibula. June 1st: To this patient was administered yesterday 1 gm. of ferrivine solution diluted to 200 c.c. with distilled water. It was not without a feeling of grave responsibility that we gave this injection, taking into consideration the reactions previously witnessed during and after the introduction of ferrivine. We must state emphatically that the reaction which resulted in this instance was the most severe we have ever experienced after an intravenous injection of any of the antisyphilitic remedies with which we have worked up to the present. The alarming symptoms came on towards the end of the injection, commencing with severe epigastric pains, followed by marked dyspnœa. The pulse then became imperceptible, and the patient turned an ashy-grey colour. Strychnine was immediately administered hypodermically, and for a period of some minutes there was grave doubt as to the patient's survival. He was finally resuscitated and passed a disturbed night; rigors ensued and persisted until the following afternoon. As no clinical improvement occurred during the next eight days, the patient was prescribed a course consisting of salvarsan, potassium iodide, and mercurial inunction.

GREAT NORTHERN CENTRAL HOSPITAL, HOLLOWAY-ROAD, N.—This being the diamond jubilee year of the hospital, the authorities of the hospital are inviting a large company to a "View Day," which is fixed for Wednesday, June 28th. The wards can be visited from 3.15 to 5. P.M.

A CASE OF ERB-DUCHENNE PARALYSIS DUE TO A BULLET WOUND OF THE FIFTH CERVICAL NERVE.

SPINAL ACCESSORY ANASTOMOSIS; RECOVERY.

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THE case here described is that of Private ——, aged 19 years, who was admitted to hospital on July 27th, 1915, with a history of having been shot while trench-digging in Gallipoli, the bullet passing through the right side of the neck. There was immediate paralysis of the right arm. He was in hospital in Malta for 14 days, during which time his wounds healed. He was then transferred to England.

On admission there were healed wounds of the neck, the entrance wound being situated just internal to the anterior border of the right sterno-mastoid muscle at the level of the pomum adami of the thyroid cartilage, the exit at the back on a level with the sixth cervical spine about an inch and a half from the mid-line. There was marked wasting of the right arm and shoulder, paralysis of the rhomboids, supra- and infra-spinati, subclavius, deltoid, biceps, coraco-brachialis, and brachialis anticus; partial paralysis of the pectoralis major, and some weakness of the supinator longus and muscles of the forearm, but no actual paralysis. Both epicritic and protopathic sensation were normal; no circumflex anæsthesia. The patient was quite unable to abduct the arm, and could not raise his forearm off the bed. In the erect posture the arm hung by the side in the position of pronation. All efforts to flex the forearm only resulted in a spasmodic contraction of the extensors of the wrist and fingers. Electrical reactions showed reaction of degeneration in the supra- and infra-spinati, deltoid, biceps, coraco-brachialis, &c. The supinator longus and the muscles of the forearm were normal. A diagnosis of a lesion of the fifth cervical nerve was made, either a physiological or an anatomical division—i.e., a severe nerve concussion plus pressure from scar tissue or a complete division; clinically, of course, these cases are the same. As there was no sign of improvement after treatment by massage, &c., operation was decided upon.

Operation.—This was performed on August 7th. Under ether anæsthesia a large flap of the skin was reflected, the incision passing along the posterior border of the sterno-mastoid and then outwards along the upper border of the clavicle for about 4 inches. The external jugular vein was ligatured and divided, giving free access to the whole of the posterior triangle of the neck. The upper trunk of the brachial plexus was then traced upwards to the interval between the scalenus anticus and medius, until scar tissue was encountered in the line of the bullet wound. By careful dissection in this scar the distal end of the fifth cervical nerve was found to be completely separated from its proximal portion, the sixth nerve lying below it quite intact, but the communicating branch was also found to be severed between the fourth and fifth nerves; ultimately deep down on the vertebræ the proximal part of the fifth nerve was similarly embedded in dense scar tissue. When the end was eventually freed there was found to be a deficiency of nearly an inch, which made end-to-end suture impossible. The spinal accessory nerve was therefore isolated and divided as far back as possible after its emergence from the sterno-mastoid, and this was sutured to the distal portion of the fifth cervical. The anastomosis was then covered by a pad of fat and fascia, which was transplanted from the neck and sutured around the junction in the form of a sleeve, the upper portion of which was carried up and around the proximal part of the divided nerve, in the hope that a few fibres might find their way down this path. The wound was then closed, except for a small drainage-tube under the skin at the outer angle of the incision, which was removed at the end of 48 hours. The sutures were removed on the tenth day (August 17th). Healed per primam.

After-treatment.—Massage and galvanism were again commenced after a short interval and the biceps and deltoid were relaxed by means of a suitable splint. The supinator longus improved sufficiently after a few weeks to enable the forearm to be slightly flexed with difficulty. September: Little change. Supinator longus much improved after massage, flexion of forearm possible by this means. October: General condition the same. November: Signs of recovery in biceps; efforts to flex forearm show slight contraction. December: Some abduction of arm possible; biceps greatly improved. January, 1916: Marked improvement in all movements. Biceps contracting well; brachialis anticus and coraco-brachialis showing signs of recovery. Abduction of arm more marked. February: Still improving; complains

of some discomfort in the scar from pressure of braces. March: Slight contractions of the supra-spinatus can now be demonstrated. Abduction is possible against resistance to the extent of a right angle with the trunk; the flexion of the forearm nearly normal. The patient can now raise his arm above his shoulder without much effort. He can perform all ordinary movements with ease and quickness. There is a certain amount of weakness, of course, but apart from this I consider the arm on the affected side almost as good as the sound one. There is a difference in circumference of just over an inch measured around the most prominent part of the biceps of each arm, and the condition is still improving.

The case is interesting from the surgical aspect on account of the rapid recovery (seven months) following an anastomosis where such a disproportion in size existed between the nerves involved, the spinal accessory being a small path for the functions of the fifth cervical; but being the only available nerve at the time I had to make the most of the material at my disposal, and I think that the result more than justifies the procedure, there being now quite good flexion of the forearm and abduction of the whole arm to a right angle of the trunk against resistance, with ability on the part of the patient to perform all the ordinary movements necessary to everyday life, to dress and undress himself without assistance, and to carry ordinary articles which do not put an undue strain on a recently paralysed arm. The early signs of recovery seen in the biceps were also striking, occurring as they did before similar ones in the deltoid, from the point of view of central regeneration of the nerve fibres.

Lesions of the musculo-spiral, median, and ulnar nerves, and even of the brachial plexus itself are fairly common, but an opportunity of suturing individual cervical nerves before they have entered into the formation of the plexus is seldom met with. The small size of the nerve, the great depth from the surface, and the dense fibrous tissue of the scar, often involving adjacent important structures, present innumerable difficulties in isolating the divided ends and in suturing, which can only be overcome by careful dissection, endless patience, and an untiring spirit not only on the part of the surgeon but also on the part of the anæsthetist; but when that which to all intents and purposes amounts to a complete recovery is attained, it repays a thousandfold for the time and trouble and care bestowed upon a case which at first sight offers so little prospect of success.

I am indebted to Lieutenant-Colonel Kay, officer in charge, Military Hospital, Devonport, for permission to publish these notes.

Devonport.

THE DIAGNOSIS OF DEXTROSURIA AND PSEUDO-LÆVULOSURIA.

BY P. J. CAMMIDGE, M.D. LOND., M.R.C.S., L.R.C.P. LOND.

THE increasing number of cases diagnosed as "diabetes" in which the patients on investigation have proved to be passing urine free from dextrose referred to me for treatment during the past year or two and the apparent frequency of such cases among our troops prompt me to write a short and preliminary note on the methods by which dextrosuria may be differentiated from "pseudo-lævulosuria," a condition for which it is commonly mistaken. It is a matter of considerable clinical importance that they should be clearly distinguished, for dextrosuria can only be controlled by suitable restriction of the carbohydrate intake; while pseudo-lævulosuria is benefited by an entirely opposite line of treatment—namely, a diet containing an abundance of carbohydrate with reduction or temporary elimination of proteins. When dextrosuria and pseudo-lævulosuria occur together, as is often the case, the most satisfactory results are obtained by a series of alternating diets calculated to deal with each in turn.

In order to eliminate the difficulties that arise in testing the urine for sugar with Fehling's solution it is advisable to employ Benedict's more sensitive and reliable test as a routine. It is a single solution which keeps indefinitely, does not react with creatinine, uric acid, and other interfering substances, and is about ten times as sensitive to sugar as Fehling's solution. With 0·3 per cent., or over, of dextrose it gives a characteristic reaction on boiling, but with smaller quantities the precipitate forms only on cooling. A similar delayed reaction is characteristic of pseudo-lævulose (iso-glucuronic acid), which does not reduce alkaline copper solutions as readily as dextrose. The formation of a precipitate as the solution cools is suggestive, therefore, of pseudo-lævulose or a small quantity of dextrose. To differentiate the two, Borchardt's modification of Seliwanow's test is employed. A mixture of 4 c.c. of the urine and 1 c.c. of Seliwanow's reagent (resorcin, 0·5 gm.; hydrochloric acid, sp. gr. 1·195, 30 c.c.; distilled water 30 c.c.) is heated to boiling in a water bath for a few minutes. If pseudo-lævulose or true lævulose is present the solution assumes a purple-red colour, but dextrose alone gives no colour change. To differentiate pseudo-lævulose from true lævulose the solution is cooled, made alkaline with solid sodium carbonate, and extracted with 2 or 3 c.c. of ethyl acetate. If true lævulose is present the ethyl acetate extract is red or pink, but if the positive result was due to pseudo-lævulose the watery solution retains the pigment, and the extract is yellow or brown. The diagnosis may be confirmed by preparing the para-bromphenylosazone and taking its melting-point. The osazone of pseudo-lævulose melts at 256° C., that of true lævulose at 197° C., and the osazone of dextrose at 220° C., while the hydrazone of glycuronic acid melts at 236° C.

In conjunction with Mr. H. A. H. Howard, I have devised a method by which dextrose may be estimated in the presence of pseudo-lævulose, &c., and the amount of the latter may be determined by difference. This is based upon the fact that pseudo-lævulose, also true lævulose and glycuronic acid, is precipitated from alkaline solutions by calcium, while dextrose remains in solution. The total reducing power of the urine is first determined by some reliable method, of which I find Scales's or Bang's to be the most satisfactory. Into a 15 c.c. centrifuge tube are then placed 10 c.c. of the urine, 4 c.c. of a solution of calcium chloride (10 per cent.), and 1 c.c. of sodium hydrate solution (30 per cent.), and the contents are well mixed. The tube is centrifuged for three or four minutes to separate the precipitate as much as possible, and the clear supernatant fluid filtered off. The reducing power of 7·5 c.c. of the filtrate, corresponding to 5 c.c. of the original urine, is then determined in the same way as for the total sugar. The result, allowing for the dilution, gives the percentage of dextrose, and the difference between this and the "total sugar" shows the percentage of pseudo-lævulose (also true lævulose and glycuronic acid). If true lævulose was found by the qualitative tests, a very rare occurrence in my experience, it may be estimated by ascertaining the reducing power of the filtrate from a specimen of the acidulated urine treated with a saturated solution of lead acetate, since the lead salts of dextrose and true lævulose being soluble remain in solution, but the insoluble pseudo-lævulose salt is precipitated out and remains behind on the filter.

I have prepared this note in the hope that it may be the means of helping some who find that their cases of "glycosuria" and "mild diabetes" do not respond to regulation methods of treatment in the way they expect to arrive at an explanation, and also with the certainty that it will lead to a revision of the diagnosis in many instances where patients have been rejected for life insurance, &c., owing to the presence of "traces of sugar" in the urine. I hope to deal at length with the clinical, pathological, and chemical aspects of the subject on a future occasion, when circumstances are more propitious and I have had further time for investigating it.

Nottingham-place, W.

THE SOCIETY OF EDUCATION.—A research committee of the Society of Education has undertaken an inquiry the object of which is by means of a questionnaire to collect from adults information as to the ways in which they, as children, became aware of the facts of sex, birth, and parenthood. It is felt that a mass of such information, together with an expression of personal opinion upon the recognisable effect of such means of securing information, should provide considerable illumination of the problem of sex-education. The committee is seeking the coöperation of adult persons who are willing to assist the inquiry by answering the questionnaire, and, with a view to obtaining unfettered reply, asks that the forms should be filled in and returned anonymously. Application for the forms should be made to the secretary of the Research Committee, Society of Education, 9, Brunswick square, W.C.

Clinical Notes:
MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

GUNSHOT WOUND OF RIGHT ORBIT AND MAXILLA;

MUCH DESTRUCTION OF BONE AND SOFT PARTS; ADAPTATION OF ARTIFICIAL EYE AND CHEEK.

BY SIR WILLIAM J. COLLINS, K.C.V.O., M.S., M.D., B.SC. LOND., F.R.C.S. ENG.,
OPHTHALMIC SURGEON TO THE KING GEORGE HOSPITAL, ETC.

Private ——, aged 32, was severely wounded on the right side of the face by a bullet at Ypres on Oct. 30th, 1914. He was taken prisoner by the Germans, but while in hospital was placed under the care of two French surgeons, also prisoners—viz., Dr. Bettremieux and Dr. Ballenghien, both of Roubaix. From notes made by the latter, which I have seen, it appears that on Nov. 9th, 1914, the patient had an enormous wound of the right side of the face, extending from the ear to the nose, the soft parts including the right globe, and portions of the eyelids were destroyed and there were fractures of the right malar, superior maxillary, lacrymal and nasal bones causing a large opening between the nose and the right orbit. Seven operations were performed between Nov. 12th, 1914, and March 4th, 1915, at first for the removal of the remains of the globe and of sloughs, and later of a plastic nature with a view to restore the cheek. Deafness of the right ear having supervened paracentesis of the tympanum was performed.

The patient was admitted under my care at the King George Hospital on June 29th, 1915, and I performed two further plastic operations, suturing together the palpebral margins and also closing the sinus into the nose. I felt that the aid of art might then be more usefully called in rather than attempt any further effort at blepharoplasty. I accordingly designed an artificial cheek of painted and moulded copper-plate, with eye attached, set in a pair of spectacles, similar to a contrivance I had previously employed in a case where I had removed an eye and superior maxilla for sarcoma.[1] Mr. Eastgate, of Messrs. Sillis, Strudwick, and Co., took great pains in constructing this apparatus, and his mechanical and artistic skill have, as the series of accompanying photographs serve to show, achieved a highly satisfactory result.

The first photograph shows the condition of the wound in the early days, the second after the kindly and skilful work of Dr. Ballenghien, the third represents the state on leaving the King George Hospital, and the fourth the appearance with the artificial cheek and eye applied.

Albert-terrace, Regent's Park, N.W.

[1] See THE LANCET, Sept. 29th, 1894, p. 736.



Reproductions of photographs illustrating Sir William Collins's case of gunshot wound of right orbit and maxilla.

TWO CASES OF STRANGULATED UMBILICAL HERNIA.

BY F. L. HARMAN BROWN, M.B., C.M. EDIN.,
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AND
E. W. G. MASTERMAN, M.D. DURH., F.R.C.S. ENG., D.P.H.,
SENIOR HOUSE SURGEON, COVENTRY AND WARWICKSHIRE HOSPITAL.

THE two following cases appear to us worthy of record on account of their peculiar difficulty and successful issue. The patients were both unusually fat, middle-aged women, both were operated on within three days, and both left the hospital on the same day. They suffered from chronic emphysema, asthma, and albuminuria.

CASE 1.—The patient, aged 55, was admitted to hospital on March 2nd, 1916, with a history that she had had complete intestinal obstruction for three days and had been vomiting all she took. The patient vomited in the ward soon after admission. She was an immensely stout woman, and was said to have weighed 18 st. before this illness (she weighed 16 st. 9 lb. when discharged). She had had an umbilical hernia for several years. On admission the patient was in great pain, and she had a large, nodular, irreducible and very tender mass half buried in the thick deposit of fat over the abdominal muscles. Temperature, 97° F.; pulse, 104. The condition of the patient was very unfavourable. She had chronic bronchitis and emphysema, and her face was chronically cyanosed; there was a considerable quantity of albumin as well as some blood and pus in the urine. In consequence of these conditions the operation was done entirely under local anæsthesia, codranine being used.

The herniated mass was dissected out of the subcutaneous fat and the narrow opening in the abdominal fascia was enlarged. On opening the sac the contents were found to consist largely of omentum, much of which was deeply congested, and partly of large intestine. All the sac contents were adherent to each other and to the peritoneal covering. The omentum was ligatured and removed along with a great part of the coverings of the hernia, and the remainder of the peritoneal covering adherent at the neck being carefully divided it was returned together with the intestine and the stump of the omentum to the abdominal cavity. The wound was then sewn up in layers. The patient bore the operation well. The vomiting ceased at once and she passed flatus a few hours later. On account of the condition of the chest she had to be propped up in a sitting posture from the first, and her cough and asthmatic breathing were very troublesome for the next fortnight. She had an enema with successful result on the 6th and the 9th, and her bowels were open naturally on the 11th. The wound healed by first intention and, after being fitted with a proper belt, the patient left the hospital in good condition on April 8th.

CASE 2.—The patient, aged 47, was admitted on March 5th, 1916. She was very fat (weight on leaving 13 st. 7½ lb.), but not like the previous case. She had had an umbilical hernia for 16 years, gradually growing larger. She had had several attacks of semi-obstruction, and three months before a severe one which was thought to be commencing strangulation. She had never worn any belt or truss. On March 3rd

the patient was seized with severe pain in the hernia, and during that night she commenced vomiting. The bowels were opened slightly on that night but not since. Just before admission she had had an enema.

On admission the general appearance of the patient seemed very much better than that of the patient in the previous case, and the vomiting had then quite ceased for 24 hours, but the temperature was 97·6° F. and the pulse 104; the tongue was furred, and there was a trace of albumin in the urine. The hernia formed a rounded, tightly distended, and very tender mass of about the size of a large orange, lying in the immensely thick, fatty layer of the abdominal wall. The skin over the mass was tight and distended.

Under anæsthesia by ether an incision was made over the most prominent part of the mass and gangrenous intestine presented itself, which at once gave way with the escape of gas. As it was impossible to deal with the strangulated mass directly, the opening in the abdominal wall was enlarged, the peritoneal covering of the sac was cut away at its neck, and the whole mass was drawn forwards. It was then seen that a loop of transverse colon was strangulated in the sac, together with a considerable mass of omentum. The latter was transfixed and tied off. The two ends of the colon were clamped, and the whole hernia, sac and contents, was cut off. The two ends of the divided colon were now united end to end and returned to the abdomen, and the wound in the abdominal wall was closed in layers. The patient bore the operation exceedingly well. She slept soundly the night following, after 1/4 gr. morphia given hypodermically. On the next afternoon the temperature rose to 101·4°, and remained at about 100° for the next three days, after which it sank to normal. Flatus was passed and the bowels were opened on March 7th; no vomiting and no cough, although the breathing was asthmatic in character. She had no abdominal symptoms from the time of the operation, and having been fitted with a special belt she left the hospital in good condition April 8th.

A CASE OF TENDON TRANSPLANTATION FOR WRIST-DROP.

BY ARNOLD K. HENRY, M.B., B.CH. DUB., F.R.C.S. IREL.,

LATE SURGEON TO THE SERBIAN MILITARY HOSPITAL, POSHAREVATZ.

THE patient, a Serbian, who had been wounded in November, 1914, came to me in September, 1915. His wounds numbered five; all were due to bullets, and all had been received simultaneously, four in the right upper extremity and one in the left shoulder. Only two of these wounds were relevant to the wrist-drop. Of these, one was a fracture of the lower end of the right humeral shaft and the other of the upper third of the right radius. In both places a mass of callus could be felt. The extensor and supinator muscles of the right forearm were wasted, but cutaneous sensation over the distribution of the radial branch of the musculo-spiral nerve was scarcely affected. Thus it was probable that the musculo-spiral trunk had escaped harm from the wound which had fractured the humerus, and that the seat of nerve injury lay in its posterior interosseous branch, either where this passed round the radius in the forearm or in the upper arm beside the fractured humerus. The uncertain position of the lesion and the presence of much callus made the prospect of successful nerve suture so inconsiderable that I decided to correct the wrist-drop by tendon transplantation.

With the forearm supinated on a board, a long incision internal to the flexor carpi radialis exposed its tendon from the muscle belly to the anterior annular ligament. Two sutures of fine chromic gut were passed through the tendon at points half an inch apart, close to the annular ligament. The tendon was divided between these sutures and freed towards its fleshy origin. Fortunately the patient had a palmaris longus muscle in the right arm, and I divided its tendon close to the annular ligament and sutured the proximal end of it to the distal portion of the flexor carpi radialis tendon, so as to supply a frail substitute for that muscle. The wound was then covered by a towel wet with hot saline and the arm pronated. A long incision exposed the extensor communis digitorum tendons; these were slightly freed, their adjacent surfaces were scraped, and the four were sutured together just proximal to the wrist to form a single broad extensor tendon. The forearm was again supinated and the ends of the proximal suture through the flexor carpi radialis were caught in the tip of a Kocher's forceps. This was passed between the flexor longus pollicis and the profundus digitorum, and gently forced through the interosseous membrane at the middle of the forearm. By means of the suture the flexor tendon was easily drawn to the extensor aspect of the forearm through the aperture in the tissues held wide for it by the jaws of the forceps. The four extensor communis tendons were pulled proximally, and when they were taut enough to half extend the wrist the free end of the flexor tendon was sutured to the place where the four had been united. The incisions were then closed.

The rapid advance of the Germans prevented me from following the case for longer than a month, but at the end of that time the position of the wrist was good and its condition encouraging, for the patient, although he could not yet actively extend his wrist, was able to keep it extended in pronation for a short while after it had been placed for him in that position. Further, on the twenty-first day after operation he wrote his name with the right hand for the first time since his injury, and he wrote it distinctly.

Bray, Co. Wicklow.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION FOR THE STUDY OF DISEASE IN CHILDREN.

Exhibition of Cases.—Communications.

A MEETING of this section was held on May 26th, Dr. E. CAUTLEY, ex-President, being in the chair.

Dr. CAUTLEY showed two cases of Optic Neuritis (? Cerebral Tumour). The first case, a boy aged 6 years 8 months, attended as an out-patient at the Belgrave Hospital for Children on April 17th under Dr. H. R. Prentice, who admitted him the following week with the subjoined notes:—"April 10th: Headache for two weeks. Wakes up screaming at night. Anorexia, furred tongue, offensive breath, (?) vomiting, B.O. April 17th: Not so well; headache, retching, drowsiness. Arm reflex greater on the left than right side; normal abdominal reflexes; knee-jerks equal and brisk. Gait unaffected. Optic discs swollen, and hæmorrhage on the left disc. He vomited during the afternoon but did not complain of headache." Since being in hospital he had not suffered from headache or vomiting. Mr. Bishop Harman's report on the eyes on May 9th was as follows: "Bilateral papillitis, 1·5 D. elevation. Fine interstitial hæmorrhages at left disc, no exudation. No disorder of fixation." There was no albuminuria. The gait was a little stiff. The second case was that of a girl, aged 11 years, admitted to Belgrave Hospital on April 27th. One month previously she had two fits. Since then she had had almost constant headache and vomiting the result of the headaches. On April 26th she had another fit. She was a strong, highly coloured, healthy-looking girl. Her abdominal reflexes were practically absent; the deep reflexes were depressed, the left rather more marked than the right; plantar reflexes absent. Her head was tilted somewhat towards the right shoulder, which was a little raised. The gait was somewhat unsteady, (?) cerebellar, and she tended to fall backwards and to the left. Her left side was a little weaker than the right and showed slight incoördination, probably sensory; and for the same reason the left movements were clumsy. The eyes showed nystagmoid movements, lateral and rotatory, and slight left convergent squint. Perhaps there was a little weakness of the left facial nerve, and there was double optic neuritis. Mr. Bishop Harman's report (May 9th) was as follows: "Nystagmus on extreme duction, tendency to left convergent squint; well-marked papillitis in each eye, about 2 D. elevation, a trifle more on right side; no hæmorrhages or exudation; slight silkiness of right macular region." Since being in hospital no special symptoms had been noted and she had not suffered from headache or vomiting.

Dr. CAUTLEY also showed a case of Infantilism in a boy aged 6 years 8 months (sixth child). He was said to have been a puny baby, but to have grown up to 3 months of age. At the age of 9 months he only weighed 4½ lb., and from 13 to 18 months of age he remained stationary at 6 lb. 1 oz. He was entirely breast-fed for one and a half years and partially so for another six months. Proprietary foods were

given up to the age of 4½ years, and since then he had had ordinary diet. His mother suckled her previous baby for 18 months, up to her confinement with this child. During the first year of life he was remarkably somnolent; and at the age of 3 years he had diphtheria. At times he was troubled with constipation, and occasionally with cramps in the hands and feet. He had had no such troubles during the two months he had been under observation. Condition on May 18th: height, 26½ in.; weight, 16 lb. 14 oz.; head, 17 in. He was pot-bellied, markedly rachitic, and the liver had dropped well below the costal margin. There were enlarged tonsils, adenoids, and moderate adenitis. The skin was elastic and complexion rather dull. He spoke fairly clearly, and mentally appeared about 4 to 5 years of age. He had 20 good teeth, the first having been cut at the age of 2 years. His appetite was poor. On April 22nd he developed pertussis. This induced convulsions, once on April 24th and four times on the 25th, and was followed by general bronchitis. On admission on March 25th he weighed 15 lb. 12 oz., and on April 20th he had gained 28 oz. Since then the pertussis and bronchitis had caused loss of weight. The Wassermann reaction was negative. There appeared no special cause for his backward development beyond malnutrition and unsuitable feeding during early life. He had been taking polyglandin and improved, but the improvement may have been due to food and nursing.

Dr. W. MITCHELL SMITH showed a case of Giantism in a girl aged 12 years 9 months. Family history: Patient was the seventh of ten pregnancies; two miscarriages; five died at or soon after birth; three living and well; brother, aged 20 years, height 5 ft. 9½ in., weight 16 st.; a brother, aged 11 years, normal; and present case. Father suffered from diabetes; once 17 st., now 14 st. Mother healthy. Maternal grandmother reputed to be 32 st. at time of her death. Present condition: Height, 5 ft. 4½ in.; weight, 17 st. 7 lb. Very obese, with equal distribution of fat; large framework, especially across the hips. Pubic hirsuties. Menstruating regularly since last Christmas. Blood pressure 125 mm. Hg; urine normal; optic discs normal. Mentality normal for girl of her age (Standard VII.); excellent memory, placid disposition, gross eater. Skiagram of sella turcica showed that —(1) it was very well developed for a girl of her age; (2) there was no erosion of the anterior or posterior part to indicate a tumour of any size.

Dr. J. WALTER CARR showed a case of Juvenile General Paralysis in a boy aged 8 years. There was nothing in the family history to suggest syphilis, and the patient did not present any of the stigmata of the disease. He had not had any previous illness of importance. For about six months his walk had been getting increasingly jerky, and he had sometimes fallen down. For the last three months his pupils had been noticed to be unequal. Recently his speech had been getting indistinct and mumbling. Formerly he was rather bright at school, but of late had ceased to make any progress; had been unable to write, and had lost his memory. He had not had any convulsions. He was a healthy-looking, rather excessively stout boy. He showed marked mental impairment, with distinct delusions of exaltation; for instance, he talked of having knocked down a policeman and killed two Germans. He had incontinence of urine and often of fæces also. The left pupil was larger than the right and reacted very sluggishly to light; the right pupil reacted normally. The left optic disc was very considerably paler than the right. He had a distinctly spastic gait, with double ankle clonus and exaggerated knee-jerks. The triceps and supinator jerks were also increased. It was not possible to be sure whether the plantar reflexes were flexor or extensor. There was no ataxy. The Wassermann reaction of the blood was positive.

Mr. A. S. BLUNDELL BANKART showed a case of Hemihypertrophy, partly crossed, in a boy aged 6 years. Asymmetry of the face and limbs was noticed soon after birth. The condition had remained stationary, except in so far as the child had grown. The right side of the face, right half of the tongue, right thigh, and right leg were decidedly larger than the corresponding parts on the left side. The left forearm was decidedly, and the left arm was slightly, larger than the right forearm and arm respectively. Skiagrams of the forearms and the legs showed that the bones on the enlarged side were slightly thicker than those of the smaller side (?). There was no increase in length. The left testicle was slightly larger than the right.

Dr. C. O. HAWTHORNE showed a case of Double Optic Neuritis in a boy, aged 9 years, without other evidence of intracranial or nervous disease, or of disease in the thoracic or abdominal viscera. There was some degree of anæmia, but by no means extreme, and the Wassermann reaction was negative. He had been under observation in hospital for 14 days, and except for some headache on the first day he had seemed quite well and happy. Acuity of vision, 6/5 each eye. The history was of occasional attacks of headache commencing eight months ago, sometimes very severe, and in recent weeks often accompanied by vomiting. There was no admitted violence to the skull or of illness other than the above. There was a history of "consumption" in the mother's family and of "fits" in that of the father; a sister had a "tubercular knee."

Mr. E. D. D. DAVIS showed a case of Ulceration of the Soft Palate of Unusual Origin in a girl aged 13 years, who had been sent to Charing Cross Hospital by Dr. J. D. Rolleston with the history that she had been admitted to the fever hospital for diphtheria on April 14th. One week before admission to the fever hospital she complained of sore-throat, but was otherwise quite well. Cultures of the fauces showed no diphtheria bacilli and direct smears showed no Vincent's organisms. When seen by Mr. Davis on May 19th there was a large irregular ulcer involving the left half of the uvula, soft palate, and left pillar of the fauces, with considerable loss of the left half of the palate. The ulceration was atypical of lupus, tubercle, or syphilis, but the Wassermann reaction was positive. There was no other lesion of the nose, pharynx, larynx, or ear. Mr. Davis also showed a case of Lupus of the Hard Palate and Gums for comparison with the above.

Dr. CAUTLEY (for Dr. P. HAMILL) showed: 1. A case of Recurrent Jaundice. The patient, a girl aged 13 years, had been under observation since November, 1914, suffering from recurrent attacks of jaundice. From then up to the present time she had not been entirely free from pigmentation. During the exacerbations bile was present in the urine, the fæces were clay-coloured, and the liver was enlarged. In the intervals her general health was good. Since January, 1916, the spleen had begun to enlarge, and had extended more than 1 in. below the costal margin. During an exacerbation the blood count was found to be: Red blood cells, 3·78 million; white blood cells, 10,800 per c.mm.; hæmoglobin, 70 per cent.; colour index, 0·9 per cent. Differential count: Polymorphonuclears, 52 per cent., total number 5620; lymphocytes, 45 per cent., total number 4860; eosinophiles, 1 per cent., total number 100; basophiles, 2 per cent., total number 220. Very slight anisocytosis and poikilocytosis; no nucleated red cells seen. Corpuscular fragility normal. Loewi's pancreatic reaction was negative. 2. A case of Unilateral Enlargement of the Tongue. The patient, a girl aged 5 years, was admitted to hospital with unilateral enlargement of the tongue. It was with difficulty that the tongue could be retained in the mouth. The enlargement appeared to affect the right side only, and involved the floor of the mouth. The papillæ were enlarged, but did not resemble the minute vesicles commonly seen in cases of lymphangiectasis. Skiagrams did not reveal any corresponding hemihypertrophy of the cranial bones.

Mr. PAUL BERNARD ROTH showed a case of Congenital Defect of the Left Ulna in a girl aged 9 years, which was described in THE LANCET of May 23rd, 1914, p. 1457.

Dr. J. LAWSON DICK read a paper on the Teeth in Rickets.

Dr. ERIC PRITCHARD read a paper on the Rational Treatment of Rickets, with an illustrative case.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

SECTION OF SURGERY.

Injuries to Peripheral Nerves.—Bullet Injuries of Nerves and their Treatment.

A MEETING of this section was held recently, Mr. ALEX. BLAYNEY being in the chair.

Major F. C. PURSER read a paper on Injuries to Peripheral Nerves. He showed first what might be expected in a nerve which was wholly divided and then sutured under

the most favourable conditions. Wounds caused in war seldom had so good an ending. They might be divided roughly into two classes—a numerically smaller class of total loss of function and a larger class where function was not wholly lost. A case in either class, but especially in the latter class, might be associated with pain or with hyperæsthesia. In the first class, with total loss of power and of sensation, the question to make sure of first was that the lesion was organic, of a nerve or nerves, and not functional. Having decided this, the exact outline of sensory loss and extent of motor loss should be recorded. If there were no improvement in six weeks or two months exploration of the nerve was justified. Partial loss of function varied in severity of its symptoms from a loss almost total to a mere subjective sense of abnormality. Motor loss, as far as it can be compared with sensory loss, is often disproportionately great. Improvement in the condition of a case may be gauged better by an exact examination of sensory changes than elsewhere. Cases were described illustrating this. Either total or partial loss of function may be due to anatomical section of nerve or to the inclusion of the nerve in scar or other compressing tissue. Recovery following secondary suture was far less satisfactory than that following the release of the nerve from scar tissue. Operation was called for when the disablement was very great, and was not lessening under proper relaxation and massage treatment, and when pain was severe. Often enough it made matters worse, and should not be undertaken without very careful repeated consideration of the case.

Mr. W. S. HAUGHTON read a paper on Bullet Injuries of Nerves and their Treatment. He dealt chiefly with the mechanical effects of high-velocity bullets striking the tissues, and described the different types of lesion that resulted in the nerves in the neighbourhood of wounds.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society was held on June 2nd, Dr. Leonard Dobson, the President, being in the chair.—Dr. J. Dundas Grant read a paper on Some Points of Practical Interest in the Diagnosis and Treatment of Diseases of the Nose, Throat, and Ear. Beginning with the subject of nasal affections, he said that a nasal discharge was sometimes simply due to eczema of the nasal vestibule, owing in part to too zealous irrigation with saline solutions; this could be cured by the cessation of irrigation, and by the use of a simple ointment. In acute nasal catarrh the sinuses were frequently involved, and various remedies were suggested. In asthma the condition of the nares should always be examined. For ozæna a very efficient method of cleansing the nose with an alkaline solution was demonstrated. Other methods of treatment were described. One form of nasal obstruction often overlooked was due to collapse of the alæ nasi. As regards throat affections, the fact that persistent hoarseness might be due to carcinoma of the larynx, necessitating immediate operation, was frequently overlooked, whereas pharyngo-mycosis, which generally disappeared spontaneously after some period, longer or shorter, caused early alarm. After discussing the various causes of stridor, dysphagia, regurgitation of food, and hæmorrhage from the mouth, Dr. Dundas Grant passed on to the consideration of vertigo and relaxed membrana tympani, and concluded by demonstrating an ingenious method of detecting simulated deafness.—Dr. Stanley Melville exhibited skiagrams as follows: (1) Cardiospasm; (2) rabbit-bone (vertebra) in right bronchus, removed by operation; (3) safety-pin in right bronchus, removed by operation; (4) spasm of upper part of œsophagus; and (5) irregular left frontal sinus.

AT the recent general meeting of the Coroners' Society of England and Wales Mr. F. N. Molesworth, solicitor, coroner for the Rochdale division of Lancashire, was unanimously elected President for the ensuing year. Dr. F. J. Waldo, coroner for the City of London and borough of Southwark, was elected Vice-President. Owing to the war the usual annual banquet was not held. The members of council were entertained at lunch by the outgoing president, Dr. Waldo.

Reviews and Notices of Books.

An Introduction to the Theory of Statistics.

By G. UDNEY YULE, M.A., Lecturer in Statistics, University of Cambridge. Third edition, revised. London: Charles Griffin and Co. Pp. 382. Price 10*s.* 6*d.* net.

THE need for a book such as this is great, as there are few of us who are able to draw reliable conclusions from the mass of statistics published; we therefore give a cordial welcome to a work that will help us to read a table of statistics intelligently, and especially to the one under notice, as it is not encumbered by abstruse mathematics.

The notation of the book is clear and simple. The attributes of an assembly are denoted by capital letters, the absence of these attributes by the corresponding Greek letters—e.g., if A denotes blindness, α denotes sight. Further, the number of cases of blindness in the assembly is denoted by the symbol (A); similarly, if B denotes deafness, the class-frequency, as it is called, of those who are both blind and deaf is indicated by (A B). Let us suppose that we are given the following statistics of a certain assembly of persons: The total number of persons examined N = 1000, of these 50 are blind, 40 are deaf, and 2 are both blind and deaf. What conclusions can we draw as to the relation between the blindness and deafness in this assembly? We have (N) = 1000; (A) = 50; (B) = 40; (A B) = 2. Now clearly (N) = (A) + (α), and similarly, if we consider only the specified universe of deaf people in this assembly, we must have (B) = (A B) + (α B). It is obvious that if A is not related to B there should be the same proportion of the B's among the A's as among the non-A's—i.e., if A and B are independent $\frac{(A\,B)}{(A)} = \frac{(\alpha\,B)}{(\alpha)}$. Similarly, $\frac{(A\,B)}{B} = \frac{(A\,\beta)}{(\beta)}$, where there is the same proportion of the A's among the B's as among the non-B's. When $\frac{(A\,B)}{A} > \frac{(\alpha\,B)}{(\alpha)}$ we draw the inference that A and B are positively associated in the assembly considered, possibly from some common cause such as syphilis. In the case given we must compare—

$\frac{(A\,B)}{(A)}$ with $\frac{(\alpha\,B)}{(\alpha)}$ or $\frac{(B)-(A\,B)}{(N)-(A)}$, i.e. $\frac{2}{50}$ with $\frac{38}{950}$ or $\frac{2}{50}$

(or similarly, $\frac{(A\,B)}{(B)}$ with $\frac{(A\,\beta)}{(\beta)}$, i.e. $\frac{2}{40}$ with $\frac{48}{960}$ or $\frac{2}{40}$)

As the two ratios are equal in this case we conclude that A and B are independent in this assembly, and hence we might say that probably it was not an assemblage of syphilitic patients.

There are one or two warnings that must always be borne in mind: (1) that "Association cannot be inferred from the mere fact that some A's are B's, however great that proportion" (p. 29); "the mere fact that ..... 99 per cent. of A's being B implies nothing as to the association of A with B; in the absence of information we can but assume that ..... 99 per cent. of α's may also be B's" (p. 39); (2) the conclusion drawn refers only to the assembly examined; no general conclusion can be drawn from such a small number as 1000. Now if we denote vaccination marks by A and small-pox by B we shall find $\frac{(A\,B)}{(A)} < \frac{(\alpha\,B)}{(\alpha)}$. This clearly shows that the vaccinated are less liable to small-pox than the unvaccinated, or that there is a negative association between vaccination and small-pox. But the opponents of vaccination contend that this does not necessarily imply a protective effect of vaccination, but that it is due to the fact that most of the unvaccinated are drawn from the lowest classes, living in very unhygienic conditions. Of course, if statistics were taken from a section of the population living under the same hygienic conditions (whether good or bad) this contention could be proved false. When an association between A and B is found, we cannot infer that the relation is a direct one; it may be due to an association of C with A and C with B, where C has not been noted in the tables (as syphilis has been suggested above).

The reader may meet with some difficulty in following the chapter on Association and some of the subsequent pages, since the equations which are true when A and B are independent, are applied to cases where there is a relation between A and B. For instance if, and only if, A and B are independent, or—

$$\frac{(A\,B)}{(B)} = \frac{(A\,\beta)}{(\beta)},$$

$$\frac{(A\,B)}{(B)} = \frac{A\,B + A\,\beta}{(B) + (\beta)} = \frac{(A)}{(N)}.$$ (Similarly it may be shown that $\frac{(A\,B)}{(A)} = \frac{(B)}{(N)}$)

$$\therefore \quad A\,B = \frac{(A)\,(B)}{(N)}$$

It is quite true, as stated in the book again and again, that A and B are independent if $\frac{(A\,B)}{(B)} = \frac{(A)}{(N)}$, and that they are positively or negatively associated if $\frac{(A\,B)}{(B)} \gtrless \frac{(A)}{(N)}$. But in this last case the difference between $\frac{(A\,B)}{(B)}$ and $\frac{(A)}{(N)}$ is less than the difference between $\frac{(A\,B)}{(B)}$ and $\frac{(A\,\beta)}{(\beta)}$, as, indeed, is pointed out on p. 31. In this case one is advised to use the correct ratio $\frac{(A\,\beta)}{(\beta)}$ rather than the approximation $\frac{(A)}{(N)}$ to show the considerable positive association between A and B. The figures noted for this special case are—

$$\frac{(A\,B)}{(B)} = \cdot 70 \qquad \frac{(A)}{(N)} = \cdot 67 \qquad \frac{(A\,\beta)}{(\beta)} = \cdot 40\,;$$

and clearly the difference between ·70 and ·40 is much greater than that between ·70 and ·67. The reader is afterwards surprised to find that the measure of the association and the Mean Square Contingency Coefficients are all based on the difference between (A B) and $\frac{(A)\,(B)}{(N)}$. This is obviously based on the difference between $\frac{(A\,B)}{(A)}$ and $\frac{(B)}{(N)}$, or between $\frac{(A\,B)}{(B)}$ and $\frac{(A)}{(N)}$, which is shown to be faulty. In the next edition it is to be hoped that this difficulty will be cleared up. The rest of the book dealing with frequency distribution, measures of dispersion, correlation, the theory of sampling, &c., is too technical in its nature to discuss profitably in a review. We have only noted one misprint—$(\alpha\,B)\,(\alpha\,\beta)$ for $(\alpha\,B)\,(A\,\beta)$, on p. 28.

In conclusion, we heartily congratulate the author for producing a book that should be of great value to biologists, and all students of economics and vital statistics.

The Pathology of Tumours.

By E. H. KETTLE, M.D., B.S. Lond., Assistant Pathologist and Lecturer on Pathology, St. Mary's Hospital Medical School. With 126 illustrations. London: H. K. Lewis and Co., Limited. 1916. Pp. viii. + 224. Price 10*s.* 6*d.* net.

THE subject of tumour formation still remains one of the most enigmatic in the whole field of pathology, in spite of the concentration of research directed to its elucidation in nearly all countries. It is therefore one of special interest to the pathologist, and at the same time of great practical importance to the practitioner who desires to keep in touch with the results of recent research, and to apply them in so far as they afford suggestions for prevention of the disease and for the improvement of treatment. Dr. Kettle in the book before us has collected and summarised the general information at present available upon the subject of tumours in a very satisfactory manner. His book is of convenient size, succinct, and yet readable. The established facts he presents in a clear and intelligible manner, while his account of theoretical or speculative considerations is incisive and critical.

He has divided a short book into three parts, the first dealing with the general biology of tumours, the second with their general pathology, and the third with special pathology. In the first part the structure and growth of tumours are dealt with, with special reference to the questions of innocency and malignancy. The author discusses the modes of dissemination of malignant tumours, and refers at some length to the process of permeation as described by Sampson Handley. His presentation of the main theories put forward to explain the origin of tumours is brief, but perfectly concise and critical. One of the best divisions of this part is that dealing with the experimental study of cancer, in which a clear account is given of recent work upon the study of transplanted tumours in animals. The second part begins with a consideration of questions of terminology and classification. The classifications of Powell White and Adami are given at length, but for use in this book the ordinary histological nomenclature is adhered to. The innocent connective-tissue tumours are first described, then the sarcomata, next the innocent epithelial tumours and the carcinomata. The following groups are then considered separately—endotheliomata, hypernephromata, melanomata, and teratomata. The descriptions given are in each case clear and easy to follow. They are also illustrated by reproductions of microscopic sections, for the most part from specimens observed by the author. The third part is devoted to the special pathology of tumours, which are considered according to their regional incidence. This part is also well illustrated and conveniently arranged.

We have every confidence in recommending Dr. Kettle's work as a convenient and useful handbook for the practitioner and the student. It possesses a useful index, rendering reference to any particular point easy.

LIBRARY TABLE.

Twelve Lectures on the Modern Treatment of Gonorrhœa in the Male. By Dr. P. ASCH (Strassburg). Translated and annotated by F. E. GARDNER, M.D., Lecturer, New York Polyclinic. London: W. Heinemann. Pp. 104. Price 5*s.* net.—This is a small compact volume containing a series of 12 lectures on the modern treatment of gonorrhœa and covering all the essentials of an important subject which still receives too scant attention in English surgical text-books. A chapter of special value deals with abortive treatment and the methodical treatment of acute gonorrhœa by irrigation, with details of the necessary technique. A good account is given of the selection of suitable cases for treatment, of the risks that may be encountered, and how they are to be avoided. Common complications, such as prostatitis, orchitis, and cystitis, are adequately described, as well as the treatment by urethroscopy and lavage. The book is essentially practical and can be recommended to those who, without much previous experience of the disease, are now called upon to treat it.

Orthopædic Surgery. By EDWARD H. BRADFORD, M.D., Professor of Orthopædic Surgery Emeritus in Harvard University; and ROBERT W. LOVETT, M.D., Professor of Orthopædic Surgery in Harvard University. Fifth edition. Profusely illustrated. London: Baillière, Tindall, and Cox. 1916. Pp. x. + 416. Price 15*s.* net.—This edition of a well-known text-book differs very little from the last issue, which was noticed in THE LANCET of Nov. 2nd, 1912. Except for a few additional paragraphs on syphilis and on the Abbot treatment of scoliosis, the text is hardly altered. Of the 369 illustrations, however, 21 are new and 12 of those in the last edition have been omitted. As we have said before, the book is a useful practical guide to the treatment of deformities and diseases of the bones and joints. It makes no pretentions to be a complete treatise and is in no sense a rival to such a work as Tubby's "Deformities," but the fact that a fifth edition has been called for so soon after the appearance of its predecessor is evidence of its acceptability to the medical public.

Notes on Galvanism and Faradism. By E. M. MAGILL, M.B., B.S. Lond. London: H. K. Lewis and Co. 1916. Pp. xvi.-220. Price 4*s* 6*d.* net.—This small handbook is meant to serve as an introduction to a difficult subject. It is mainly intended for masseuses preparing for their qualifying examinations. The author has a style whose lucidity is useful in explaining electrical principles that prove puzzling to most beginners, and it is probable that a good many individuals with higher aims than the masseuse would derive benefit from a study of this book. All the ordinary types of apparatus are described and their proper use explained, but the illustrations are reproduced almost wholly from the catalogue of one manufacturer. Special care has been taken

to teach how electrolytic burns may be avoided, and the proper treatment is indicated when this very undesirable accident arises. Apart from galvanism and faradism, the use of the alternating current and static electricity is dealt with, and there is also a chapter on the use of radiant heat. The book seems to be well adapted for the purpose for which it has been prepared.

The Structure of the Fowl. By O. C. BRADLEY, M.D. Edin. London: A. and C. Black. 1915. Pp. 153. Price 3*s.* 6*d.* net.—This quite short handbook is intended less for the student of comparative anatomy than for the agriculturist, whose business demands some knowledge of the domestic fowl in health and disease. But it is nevertheless an entirely trustworthy guide to the more scientific reader who desires to preface a wider acquaintance with bird anatomy by the salient facts of this study; for all the essential details, even histological, are given with abundant illustrations of a simple and easily intelligible kind. The author in his preface places candidly before us the difficulties which he experienced in determining what to leave out in a necessarily short treatise. But we have found no conspicuous lacunæ in what should prove a very handy *exposé* of the principal features of bird anatomy.

JOURNALS.

The Quarterly Journal of Medicine. Edited by WILLIAM OSLER, J. ROSE BRADFORD, A. E. GARROD, R. HUTCHISON, H. D. ROLLESTON, and W. HALE WHITE. Vol. IX., No. 35. April, 1916. Oxford: At the Clarendon Press; London, Edinburgh, New York, Toronto, and Melbourne: Humphrey Milford. Subscription, 25*s.* per annum; single numbers, 8*s.* 6*d.* net each.—The contents of this number are: 1. An Experimental Investigation on Diarrhœa and Vomiting of Children, by Edward Mellanby. This paper is a record of some interesting and suggestive observations on experiments undertaken to elucidate the pathology and treatment of diarrhœa and vomiting in children. The substance chiefly investigated is the active and toxic one β-imidazolylethylamine, which, it is known, can produce diarrhœa and vomiting, a fall of blood pressure, depression of the respiratory centre, and coma. Among the chief conclusions arrived at are: That there is a marked delay in the absorption of toxic substances normally in the intestine, such as β-imidazolylethylamine, when animals are injected with large quantities of fluid; that water in the intestines delays the absorption of toxic substances, as also does the digestion of foodstuffs and the presence of bile in the intestines. It was also found that the resistance of the animal to the action of toxic substances is very greatly increased by the injection of fluid into the circulation, and conversely that an animal with a diminished amount of fluid, particularly after the loss of a small amount of blood, has little power of resistance against toxic substances; that an animal's resistance is greatly increased after it has absorbed food, particularly meat, from the intestine. Dr. Mellanby points out how susceptible the body is to loss of fluid, and suggests that in the light of his experiments a child suffering from diarrhœa and vomiting is in an ideal position to allow toxic substances, normally present in the alimentary canal and its mucous membrane, to be absorbed rapidly and exert their full toxic action. He suggests further that the important essential in treatment is to get the volume of the body fluids of the child back to, or above, normal.—2. The Quantitative Determination of Amylase in Blood-serum and Urine as an Aid to Diagnosis, by Percy Stocks. Some important conclusions are arrived at, notably that an amylolytic ferment is present in the blood-serum and urine of all healthy individuals, and that the amount is practically constant in the blood-serum, that in the urine being subject to diurnal variations due chiefly to the digestive functions. The ferment is derived from the pancreas and is absorbed directly into the blood. The ratio of the amount in the blood to that in the urine, calculated on the total daily excretion, may be disturbed where there is renal insufficiency or where there is severe passive congestion. With these exceptions any increase of the ferment in the blood-serum denotes pancreatic mischief. The highest values found were in a case of acute pancreatitis. Dr. Stocks is of opinion that the estimation of the amylolytic capacity of the blood-serum and the urine is a most delicate and reliable test for disease of the pancreas.—3. Urticaria Tuberosa of Willan, by J. A. Nixon. A historical survey is given of the literature upon this condition, with a general account of its clinical characters and a description of five cases. The importance of distinguishing the condition from rheumatoid arthritis is emphasised, and the effects of treatment are given.

Annals of Tropical Medicine and Parasitology. Vol. X., No. 1.—Dr. H. Harold Scott, Government bacteriologist, Jamaica, contributes to this number an interesting report of his study of the so-called "vomiting sickness" of that island. The nature of this illness has hitherto remained obscure, but Dr. Scott's detailed investigations show that it is an intoxication produced by partaking of a decoction of the ackee fruit, an article of diet in common use at a certain season of the year among the negro population of Jamaica, the tree being found in many of the gardens of the lower-class inhabitants. The ripe fruit before use is boiled with yams, salt fish, or other substances, the soup, or pot-water, being given to the children, while the more solid contents are consumed by the adults. Under certain circumstances the ackee fruit becomes poisonous, and the toxic matter is readily extracted by boiling water. Children are the usual victims of the illness, which is very fatal. The tree, though common in Jamaica, is seldom found in any other of the West Indian Islands, and it is noteworthy that in none of them does "vomiting sickness" occur. In THE LANCET of Oct. 30th, 1915, we drew attention to this subject, the Governor of Jamaica in his annual report for the fiscal year 1914–15 having referred to Dr. Scott's preliminary investigations.—In a paper entitled "Ankylostomiasis: Simplified Diagnosis and Treatment," Dr. G. Duncan Whyte, of Swatow, places on record what he regards as a simple and reliable test for determining the presence of ankylostomes in a patient, and also a method which he has found to be of great help in carrying out the treatment of this disease.—The Value of Differential Blood Counts in the Diagnosis of Malaria is discussed by Captain E. Randolph Armstrong, I.M.S., whose three main conclusions are that (1) the increase of large mononuclear leucocytes found in malarial bloods is a fairly persistent change; (2) this change of ratio, evidenced by a differential count, is sufficiently specific to form a reliable test of infection; and (3) the phenomenon persists after the time when parasites disappear from the blood-stream (i.e., when parasites are no longer discoverable by practical microscopy) and so permits of a post-febrile diagnosis being made.—Mr. Henry F. Carter, F.E.S., describes three new African midges, all of them members of the family Chironomidæ and referable to that section, the sub-family Ceratopogoninæ, which contains the great majority of the biting or blood-sucking midges at present known.—Further work on the reduction of the alkalinity of the blood in cholera, and sodium bicarbonate injections in prevention of uræmia, are subjects discussed by Sir Leonard Rogers, whose observations have shown that the alkalinity of the blood is nearly always very much reduced in severe cases of cholera, and that the early and repeated administration of sodium bicarbonate intravenously has lowered the mortality from uræmia to one-fourth of its former rate.[1] It is now clear to Sir Leonard Rogers that the rule he had adopted is a sound one, and one which should never be neglected—namely, to give alkalies intravenously in all cases of cholera with each saline injection after the first, as well as with the first injection in late admissions with deficient urinary secretion. As a supplement to this paper Mr. Satis Chandra Banerjee, L.M.S., contributes a note on the technique of the estimations of the alkalinity of the blood.—A very interesting article on Immunity to Yellow Fever is furnished by Assistant Surgeon-General H. R. Carter, of the United States Public Health Service. In it is discussed whether the immunity acquired by an attack of yellow fever is permanent or only temporary, the question of human carriers in this disease being also considered. The conclusion of the author is, after many years' study and practical experience, that for all administrative purposes the immunity conferred by an attack of yellow fever may be regarded as being permanent, and that recurrent attacks, infective to the insect-transmitter, Aëdes calopos (stegomyia), do not occur. The evidence against the existence of human carriers in this disease is, in Dr. Carter's opinion, even stronger than that against the occurrence of secondary attacks.

[1] THE LANCET, July 31st, 1915, p. 221.

THE LANCET.

LONDON: SATURDAY, JUNE 17, 1916.

Hospital Sunday, 1916.

ANOTHER year of the great war is drawing near its close, and on Sunday, June 25th, for the second time since the long-drawn and stupendous struggle began, the Metropolitan Hospital Sunday Fund will appeal to the generosity of London and of the nation. At the first glance it may seem an inauspicious occasion upon which to press the claims of institutions associated in the minds of us all with the relief of the working classes in sickness or in injury, suffered when pursuing their normally peaceful avocations. But, as a matter of fact, in no year since hospitals have existed in London has their claim been stronger upon the public gratitude, and in no year has their need been greater or more obvious to all. It is a claim which, beyond all others, should be ignored by none in the places of worship in which it will be heard, and by none of those prevented by circumstances from attending divine service upon the day appointed. The Fund has met with generous support before. We have ourselves appealed on its behalf in years of peace and prosperity, in leaner years when trade was declared to be bad and money scarce, and in those years, which seem long ago, when the cloud of the South African War was dark above this country. To-day an infinitely denser shadow hangs over all the world, and we are appealing to the general public, not to the narrower circle of our usual professional readers, to remember all that our hospitals have done and are doing to lighten that shadow. We ask our readers to realise that the difficulties, which they may be feeling financially, fall with double and treble weight upon the institutions for which they should find alms on Hospital Sunday. The war has depleted the personnel of these charities, has filled their wards to overflowing, and has raised for them, as for everyone, the price of every kind of supply and service. Prices indeed for them have risen in many respects more than for the lay public who, when in health, are not affected by the scarcity of drugs or of those descriptions of food most desirable for the sick and injured. It is not the abnormal costliness of wonted personal luxuries which causes anxiety in hospitals. Their expenditure is upon things necessary for the lives of others.

When war broke out, the army of 160,000 men which our country had prepared for the remotely possible contingency of continental service, suffered severely in its first encounter with the enemy; the hospitals of London opened their doors to the first wounded that arrived in the metropolis, and those doors have stood open ever since. Military hospitals have been established by scores since those early days to meet the needs of armies not of hundreds or of thousands but of millions of men; yet to the full extent of their capacity the civil hospitals of London, general hospitals and specialised institutions alike, have treated soldiers and sailors for the wounds and diseases which war has inflicted on them. Meanwhile the organisation of the new military hospitals with promptitude and speed in the midst of war has been rendered possible by the knowledge and experience gained in time of peace in those institutions for which the Metropolitan Hospital Sunday Fund asks support. It is from their staffs and from those trained in their schools that surgeons and physicians have been gathered to form new staffs for hospitals, which less than two years ago were not dreamt of. From the same sources were drawn nurses fitted by years of hospital training to take their part in tending the wounded and in instructing the untrained women who came forward to share the task. We have been referring to hospitals at home rather than to those nearer the seat of war. But what of the work done not only in France and Flanders, but in Eastern Europe and in Africa, by men and women trained in our great voluntary hospitals? What of those who have tended, not their wounded and sick countrymen only? French and Italians, Belgians and Serbians have alike reason to be grateful to British surgeons and nurses, and the proportion of those who directly or indirectly owe their training and efficiency to a metropolitan hospital is very high. But while the Metropolitan Hospital Sunday Fund addresses itself for this reason to the whole public, and while its collections are held beyond London and the suburbs, it is mainly from these that it draws support. It appeals to no class in time of peace, but to the charitable of all classes. Now in time of war it solicits assistance from all classes alike, and not least from those who have had wounded friends or relatives restored to them by surgical and medical skill acquired in British hospitals. These in themselves would constitute a vast body of contributors, while those whose relatives have served against the enemy and escaped all injury and all disease will recognise that their indebtedness is as great, while they consider the records of past wars in which disease has accounted for more deaths than shot and shell. Let them recall the death-roll due to typhoid fever alone in the South African War, and remember that wherever this fell enemy has been fought and kept at bay among our present armies it has been with weapons forged in the pathological laboratory by men trained in our hospitals in time of peace.

At the same time, if it behoves all to think of the hospitals of London with gratitude for what they have done in the present time of war and for the profit which the nation is deriving from their patient work during years of peace, we must not

forget that it was for usefulness in peace that they were designed, founded, and supported in the past. They are there to relieve suffering among the civil population no less than they were before, and the need of the civil population for their aid is not lessened by war. Our industries continue, though dislocated and diverted in many instances in order that the needs of the army may be supplied. The younger men have gone, but the older and weaker men and the women and children remain, a great number of women having taken the places of men in operations in which accident and disablement from various causes are apt to occur. The work done for those directly the victims of war is in addition to, and not in substitution for, the hospitals' normal functions. Let us not then, even though war charities rightly claim our attention, neglect the obligation of benevolence in other directions. Let us rather remember that the hospitals are still working amidst difficulties even greater than those to which they are accustomed, and performing their normal tasks with revenues more insufficient and more precarious than before. The future is uncertain. The hospitals desire to face it with no burden of debt to hamper their energies in the future, but "war-time economy" with them is not a matter of retrenchment involving self-denial. Their normal life is regulated with the strictest frugality, and the only method of saving open to them is to reduce the number of the patients whom they treat. This, we all hope, they will never be compelled to do, for the demand for their aid increases as London grows. Hope, however, without active intervention will effect nothing, and within a few days the Metropolitan Hospital Sunday Fund will afford an opportunity for all to intervene. The appeal is to all, without distinction of rank or wealth. The richest and the poorest can give according to their means, and many of the latter will be rewarded by the feeling that they are making part repayment of a personal obligation. The indebtedness of the public to the hospitals has never been greater than to-day.

Fighting the Fly.

WITH the return of the summer the fly comes into its heritage and, unless it is to be left in undisputed possession, much time and thought must be given to the means for dealing with this pest and its attendant evils. In winter under a low average temperature the house-fly breeds with difficulty and even its usual mode of survival, whether as pupa or fully-formed insect, is still a matter of discussion. The view more generally held is that the adult fly survives the winter in warm unswept corners, and more than this, Professor F. M. HOWLETT demonstrated quite recently in the "fly-room" of the Imperial College at South Kensington that the house-fly can continue to breed in an ordinary room during the winter months. But on the other side of the Atlantic many years of observation have led Dr. L. O. HOWARD to the belief that it is the pupa which usually survives. However this may be, as soon as the warm weather returns the fly seeks out the dung-heap and the dust-bin wherein to lay eggs; the eggs soon hatch out, the whole life-history of the maggot is accomplished in a couple of weeks, and generation follows generation until the kitchens and messes of camps and the dwelling-rooms of the poor swarm with the unsavoury brood. Many measures have been suggested and tried for meeting the evil, some applicable to one stage of the fly's life-history, some to another. To tap the supply at its source and to destroy all the hibernating larvæ and insects by one great campaign would at first sight seem to be the measure most deserving of effort, but for this purpose the winter habitat must be accurately known, and, as we have seen, this information is not yet ours. Short of this, the larvæ may be destroyed in their breeding-grounds before they have become a source of danger to the community. Or, when the breeding cannot be, or has not been, controlled, the adult fly may be trapped or poisoned; if not killed it may be prevented from reaching offal and excreta and so becoming infected, or from settling on food and on the helpless infant and sick person, and passing on to them the infective material which it has collected.

In rural districts the excreta of horses and cattle so greatly exceed in quantity the other breeding-grounds of the fly that the manure-heap is the principal object to be dealt with. In England farms are for the most part scattered evenly over the country, and there is no great accumulation of manure from this source; in rural France human life is all concentrated in the villages, each house in the village is a farm and has its own manure-heap, and the dwelling rooms are therefore in August black with flies which are accepted as the ordinary gift of summer. At the present time, too, not only the normal rural inhabitant but the whole population of military camps at home and abroad is exposed to inconvenience and risk from this source. Manure is too valuable a product to be lightly destroyed, and means must be sought to secure the destruction of the larvæ without spoiling the fertilising properties of the manure itself. A simple and effective method is to surround the manure-heap with a ring of dry straw into which the mature larvæ migrate to pupate, when they can be swept up twice a week and cremated with the straw. In a recent publication[1] Professor R. BLANCHARD, of Paris, summarises the various chemical agents which have been employed for this purpose chiefly in America. Chloride of lime is efficient, but makes the manure unusable. Borax kills the larvæ apparently without damaging the manure, but is expensive and still upon its trial. Professor BLANCHARD himself favours a mechanical method, which also comes from America, in which the manure is raised on a platform above a shallow concrete basin. Water is pumped periodically upon the pile to favour fermentation, and to avoid the moist fermenting stuff the larvæ migrate from the pile, fall into the basin, and are drowned. An

[1] La Lutte contre La Mouche. Par Professor R. Blanchard. Ligue Sanitaire Française, Bulletin No. 5. Paris: 72, Rue de Rome. Price 2 francs.

overflow from the basin leads into a pit whence the water is pumped, and this becomes at the same time a valuable source of liquid manure. A physical method of destruction was touched on by Lieutenant-Colonel S. M. COPEMAN in an interesting paper in the last issue of THE LANCET. Whilst experimenting with the lethal effect of tetra-chlor-ethane on the larvæ in a tightly packed heap, Colonel COPEMAN found that the larvæ were also dead in a control heap to which the chemical had not been applied. He then directed his attention to the temperature in the interior of the manure-heap, and found it to average 70° C. in the first few days after the heap had been made, and at the end of a fortnight to be still in the neighbourhood of 60° C. Professor HOWLETT undertook an inquiry as to the lethal temperature for fly larvæ and he was able to state that they would hardly survive long at a temperature above 41° C. Here, then, is the basis of a purely physical method of dealing with the larvæ, simple and inexpensive. Colonel COPEMAN believes that the close packing has no deleterious effect on the fertilising power of the manure, and this, if confirmed, constitutes a further recommendation for this method.

The problem of dealing with the larvæ naturally varies according as the neighbourhood is an urban or a rural one. In urban districts where there is little storage of horse manure and human excreta are carried away by water, the fly-breeding principally takes place in the domestic house refuse, and it is the decaying remnants of food, animal and vegetable, to which attention must be directed. In the ideal household there is little waste, nothing that can be used as food for man or flies is thrown away, and any organic residue is burned, leaving only the dry ash to be removed. This is the end to be aimed at, both in peace and war time, but especially now that economy in food is one of the citizen's first duties. Frankly, it is hardly to be hoped that such home destruction of organic matter can be complete; gas-cooking makes it more difficult. The dustbin and sanitary pail will still contain material to attract the fly and suitable for fly-breeding. There is now the choice between preventing the fly's access to this material by means of well-fitting covers, or allowing the fly to lay its eggs and then removing the material for cremation before the larvæ have had time to mature. A recent writer, Mr. G. H. HARDY, has advocated the latter as the better method, since the female fly, if allowed to lay in the bin or pail, will do so in preference to other localities in the house or its surroundings. The resulting brood then meets its certain doom at the hands of the municipal authority which collects the house-refuse not less frequently than twice a week. To make assurance doubly sure the scheme may go further and provide the pail lids with a trap whereby the flies may enter and not escape to carry particles of filth into the house again. On one or other of the very varying lines of policy advocated we trust that success will be achieved and the breeding of the fly checked.

Medical Practitioners and the Military Service Acts.

WE publish this week a copy of a circular letter addressed to all members of the medical profession by Sir ALFRED KEOGH, Director-General of the Army Medical Service, in which he draws attention to the particular provisions of the Military Service Acts, and of the Regulations made thereunder, which concern the medical profession. A memorandum is enclosed with this letter setting out the terms of the national organisation of the medical profession in relation to the needs of the navy, the army, and the civilian population, and the document, which will be found on p. 1237 of this issue, should clear up the difficulties in which many of our readers have found themselves.

Annotations.

"Ne quid nimis."

THE PETROL CENSUS.

ON or before Tuesday, June 20th, every medical practitioner "using or keeping motor spirit for the purpose of supplying motive power to motor-cars and motor-cycles kept for the purpose of his profession," is required to make a return stating (1) his registration number; (2) whether he keeps a motor-car or a motor-cycle; (3) his average consumption of motor spirit per month during the three months ending April 30th, 1916; (4) his present stock of motor spirit; (5) his estimated requirements of motor spirit per month until the end of 1916; and (6) the purposes other than professional for which he uses his car. Failure to make the return is not only a summary offence against the Defence of the Realm (Consolidation) Regulations, 1914, but, in case it is found necessary to restrict the sale of petrol or other motor spirit, any person liable to make a return and who fails to do so will be unable to obtain further supplies. The prescribed form for making the return can be obtained at any money order office in the United Kingdom, and the particular form prepared for medical practitioners is known as Petrol Form 2. Other forms have been prepared for other classes of users, but with these we are not concerned at the moment. Whether taking stock of petrol, which ought to have been done months ago, will have any appreciable effect in removing the harassing conditions under which country practitioners at present obtain their supply—and some of them can obtain no supply at all—is doubtful. Much to the point was the letter sent out to garage owners last week by the Petrol Subcommittee, in which an attempt was made to regulate the priority of the supply of petrol according to a classified list. In this classification it is an encouraging sign to see that the requirements of medical practitioners are placed immediately after the essential requirements of the Government and the carriage of munitions and the materials for munitions of war, and before the requirements of fire-brigades, ambulances, police, and local government authorities, and all commercial and pleasure cars. This is as it should be; but the classification will be of little use if the

Committee does not take steps to control the distribution of the spirit, and thereby to ensure that medical men, in view of their attenuated numbers and their great responsibilities, can get from local dealers a supply up to the limits of the requirements stated on their returns.

THE FOOD-SUPPLY OF THE GERMAN PEOPLE.

MUCH has been written and more said about the sources of food-supply available to the Central Powers when cut off by war conditions from a large part of the usual external supplies open to them in peace-time. The view has found free expression in this country that a condition of real want, more or less slow, will be the inevitable result of this isolation. On the other hand, we have seen how Dr. Eltzbacher and his collaborators reviewed the situation soon after commencement of hostilities, and claimed that by the application of scientific methods the problem could be solved—with a restricted and altered diet-sheet it is true, but still solved. The article by two of the best known of these collaborators, of which the third and concluding part appears in this number of THE LANCET, takes the matter one stage farther. Dr. Kuczynski and Dr. Zuntz admit that some but not all of the methods which they desired for safeguarding the food-supply were taken in the first winter of conflict, and attempt to show how the lost ground could be made up for 1915 by care and yet more elaborate methods. The article is frankly critical of the German administration and was evidently not written for foreign consumption. We commend it to all serious students of food problems.

COMPULSORY NOTIFICATION OF VENEREAL DISEASE IN SWEDEN.

IN one of the appendices attached to the report on proposed legislation against venereal disease in Sweden, to which we have already referred, is a paper by Dr. Sederholm, whose views on certain aspects of these problems do not coincide with those of his colleagues on the Board of Health. He is of the opinion that venereal disease should be notifiable, as it is already to a certain extent in Sweden, and that the campaign against this evil should be carried on as energetically as against the acute infectious diseases, tuberculosis and alcoholism. But, he admits, the compulsory notification of venereal disease is attended with far greater difficulties than that of other infectious diseases. As in the case of leprosy and tuberculosis, the victims of venereal disease greatly dread the publicity that a badly administered system of notification would cause. A further barrier to the success of notification is the complicated problem of prostitution. In the country districts prostitution plays a relatively insignificant part in the spread of venereal disease; and here, where every man knows his neighbour's business and mode of life, compulsory notification might speedily lead to the detection of the source of infection and to systematic treatment. In the large towns, where the spread of venereal disease is intimately connected with prostitution, the problem is far more complicated. The patient often does not know the name and address of the person from whom the disease has been contracted, and for obvious reasons he may be unwilling to help the authorities in tracking down the source of infection. And here Dr. Sederholm sees in the regulation of prostitution a way out of the dilemma. Regulation has been conducted in the past under the supervision of the police, and is, he admits, a faulty measure from legal, social, and ethical points of view. As it now exists in many parts of Sweden it is deplorably ineffective, as well as open to grave abuses. But by a transfer of regulation of prostitution from the police to the sanitary authorities, by the careful avoidance of all publicity in connexion with notification, and by the education of the public in general, and of the subjects of venereal disease in particular, as to the nature of this disease, Dr. Sederholm anticipates an appreciable reduction of the incidence of this disease, all the more because of the recent advances in its early diagnosis and treatment. It is, however, evident that before new legislation is adopted in Sweden in connexion with venereal disease, great efforts will be made in many quarters to oppose alterations in the present system, faulty though it be, as in Sweden there is a strong "abolitionist" feeling against regulation in every form.

THE CULTIVATION OF MEDICINAL HERBS.

THE efforts to foster the cultivation of medicinal herbs in this country are deserving of every encouragement if they can be shown to be shaping towards practical ends. It has been suggested that florists whose trade has been injured by the war should take up the cultivation of medicinal herbs in order to compensate themselves for their loss. This is a sensible view, but quite apart from and quite above this consideration it is desirable that we should no longer be dependent on Central European sources for any drugs which can profitably be produced at home. We have recently had an opportunity of examining a collection of medicinal plants and their dried products shown by Mrs. M. Grieve, F.R.H.S., at the Women Workers' Exhibition at Knightsbridge.[1] This collection included balm, filix mas, valerian, aconitum, and the English lavender, for all of which, we understand, there is a demand at the present moment, while it gave indications of the plants which could be successfully grown by florists in substitution for their more decorative wares, and at the same time demonstrated the possibility of producing fine specimens of crude drugs in this country. But something more is required than the mere demonstration of successful individual efforts if we are to compete seriously with the countries of Central Europe in the production of drugs. The whole question of the cultivation of plants and the facilities for preparing the drugs in pharmaceutical form will have to be scientifically considered in all its bearings, and extended trials will have to be made before it will be possible to gauge whether the industry can be established on a commercial basis. The cost of cultivation, gathering, and drying of the herbs as compared with the yield of the alkaloids and active principles are among the important considerations which will have to be investigated, and there is also the question of suitability of soil and climate. Belladonna is a weed in this country, but the cost of extracting its alkaloid would weigh heavily against the cost of cultivation. English lavender will grow to perfection with little trouble on English soil, but many other components of the materia medica require much care and labour if they

[1] Mrs. Grieve is responsible for a School of Medicinal Herb-Growing at The Whins, Chalfont St. Peter (Bucks), where pupils are trained to be teachers or market growers.

are to be brought to perfection, while the failure of such a crop might easily be more costly to the grower than the failure of a crop of vegetables or flowers. Here, again, there is much room for trial and experiment, and it is possible that even in medicinal herb-growing some sort of balance may be obtained by cultivating the plants in such a way that should one crop fail another may take its place. Fox-glove, lily of the valley, and Solomon's seal are examples of plants possessing similar principles, and it is unlikely that all three would fail in the same year. If cultivation on a large scale should prove satisfactory a wide field would be open for research work, but the Government would have to subsidise laboratory workers for the purpose. That valuable therapeutic agencies hitherto undiscovered lie hidden in the tissues of plants is almost certain. Medicinal folk-lore is bound up with much superstition and fancy, but from time to time the "old woman's remedy" is found to be not wholly devoid of virtue. In the present war we have had the use of garlic revived, and there is an interesting paper on Succus Allii in the Control of Suppuration in Wounds, by Dr. A. D. S. Cooke and Mr. V. Gabriel, in THE LANCET of Sept. 11th, 1915, p. 603, while the therapeutic value of potato juice was extolled by Mr. Heaton Howard in THE LANCET of April 11th, 1914, p. 1035. These facts, we think, show a *primâ facie* case for encouraging a movement which would add to the commercial prosperity of the country and incidentally might afford suitable outdoor employment for invalided sailors and soldiers, as well as for women.

OSTEOGENESIS IMPERFECTA.

A USEFUL account of this little-known condition is given by Dr. H. C. Cameron in a paper which appears in the Proceedings of the Royal Society of Medicine[1] for last April. A living case of the disease was exhibited and also the skeleton of another patient who had died in Guy's Hospital. The causation of the disease is quite obscure, suggesting some derangement of internal secretions; it appears in early infancy and is not definitely related to defects in feeding. The condition consists in deficient ossification and consequent fragility of the long bones, with abnormalities in the development of the bones of the skull. The shafts of the long bones are curved and tortuous, and there is shortening of the limbs, more marked in the proximal than in the distal portions. Fractures result from very slight stresses; in one case the ribs gave way with distressing cracking noises whenever the child was lifted up. The fractures tend to heal and the resulting callus is laid down irregularly, an annular thickening resulting at the point of union. In the skull the fontanelles, both anterior and posterior, remain large, and there may be a persistent frontal suture. The skull bones are thin and ossification is defective, the lateral aspects of the skull remaining largely membranous. Owing to this there are bulging in the temporal regions and changes in the shape of the orbits, causing the eyes to look downwards and producing a superficial resemblance to a condition of mild hydrocephalus. There is, however, no distension of the fontanelles, and diagnosis between the two conditions should not be difficult. The bulging in the temporal regions may be so marked as to produce alteration in the position of the ears; it may be unilateral or symmetrical. In the discussion that followed the exhibit other peculiarities were pointed out, such as the "underhung" appearance of the lower jaw and the existence in some instances of continued pyrexia, suggestive of an infective condition. Skiagraphic examination of the skull bones reveals a peculiar formation, the normally continuous bones being replaced to some extent by a "mosaic" of small plates, suggesting separate attempts at ossification. A blue colour of the sclerotics was noted in the case exhibited, and may be characteristic of the disease.

[1] Section for the Study of Disease in Children, p. 43.

THE METROPOLITAN WATER-SUPPLY.

THE condition of the Metropolitan water-supply during the month of February, 1916, was influenced by the heavy rainfall of that month. The mean fall at 12 stations, selected as giving equal representation for all parts of the Thames basin, was 4·66 inches, being 2·67 inches above the average mean rainfall for that month during the previous 33 years. All the samples of water collected at the different works were clear, bright, and free from suspended matter. The results of the chemical examination of the raw waters of the Thames and Lee showed deterioration as judged by the albuminoid nitrogen, permanganate, and colour tests. New River water improved in quality, as judged by the same tests. The filtered waters improved except the East London (Lee) water as regards colour. Compared with the 1915 averages all the raw and filtered waters yielded results worse than their respective averages, except the Thames and New River in respect of the albuminoid nitrogen test. The three raw waters contained more bacteria than their respective averages for 1915, but the filtered waters, generally speaking, yielded not unsatisfactory results. Thus, whereas 95·2, 85·7, and 33·3 per cent. of the raw Thames, Lee, and New River water respectively contained typical B. coli in one cubic centimetre (or less) of water, 84·5, 52·4, and 45·6 per cent. of the filtered waters derived from these supplies respectively contained no B. coli, even in 100 times as much water—namely, 100 cubic centimetres. While the tendency, therefore, of stormy weather is to increase the impurity of the raw river water, the public supply is safeguarded by the efficient work of storage and filtration.

SELECTION FOR INSURANCE.

THE Assurance Medical Society was founded in 1893 by the late Dr. T. Glover Lyon to promote the discussion of the medical aspect of life assurance with a view of obtaining increased information and unity of opinion, and the late Dr. James E. Pollock, who gave the first presidential address, laid down that "this is not an association for the advancement and discussion of purely medical knowledge," but that a primary object of the association was to arrive at a greater uniformity of opinion as a body. In his presidential address this year Dr. Arthur T. Davies queries whether this uniformity has yet been obtained, and concludes that, although the society's records bear witness to a stock of increased information, the unity of opinion has only been achieved to a limited extent, and he suggests as a motto for the society *E diversitate unitas*. The advances in medical knowledge are ever widening the boundaries of our horizon with regard to human life and the way we view its diseases, and experienced examiners are

tending more towards the late Dr. P. H. Pye-Smith's dictum: "Reject all you must—pass all you can." No one, however, has yet been found to put into practice Dr. Pollock's idea when he said: "It might almost be stated that a money value might be assigned and a rate found for every condition of life in health and disease." Everything here depends upon prognosis, defined by Dr. Pollock as "the power of weighing evidence and applying your general knowledge to the future of individual cases," and the fact is recorded by Dr. Davies in his address that in spite of the opportunity often possessed by referees of becoming acquainted with the life of the applicant, the results of their examinations were, on the whole, less satisfactory than those made at the head office. A measure tending towards uniformity was the establishment in 1896 of a central bureau of offices to deal with deferred rejected lives, and Dr. Davies suggests that a similar inter-hospital bureau would prove of value and tend to advance medical science. We cordially agree with this view; in many departments of medicine the lack of any machinery whereby to correlate hospital experience closely is being felt.

THE INCIDENCE OF MALARIAL ATTACKS.

IN the issue of *Il Morgagni* of March 31st Dr. Luigi Facciolà seeks to prove that the incidence of malarial attacks during the year is not in accord with the supposed propagation of these fevers by means of the mosquito. In malarial districts the attacks of fever, whether primary or recurrent, are met with at all periods of the year, but their frequency and clinical characteristics vary according to the season. They occur most frequently in summer and autumn, and, according to the locality and the year, then constitute more or less severe epidemics which generally begin about the end of June or early in July and cease in November or December. These æstivo-autumnal fevers are usually primary and generally severe, such as malignant tertian and true quotidian; others are mild, such as mild tertian and quartan. During the winter the attacks, which always become less frequent in the late autumn, are usually more benign and for the most part are recurrences of those occurring in the epidemic season. In spring there is an increase in the number of cases, varying in different years, generally mild and consisting almost exclusively of mild types, such as single or double tertian, and single, double, or triple quartan, while primary severe fevers are rare and the mild types are recurrences of those occurring in the epidemic season of the year before. In summer and autumn one or two generations of mosquitoes are produced, and it is at this time, beginning from the third week of June, that a certain number of them become infected. Towards the end of summer or in autumn—September to November—many of them take refuge in dwelling-places and woods, and at the onset of the cold weather they no longer bite and the larger number of them die. Some of the females, however, survive, and with the spring, being already fecundated, leave their retreat and deposit their eggs. The maturation of the new generation into perfect insects may take place in April, or later in May and June, according to the species and locality, and shortly afterwards they begin to bite human beings and other mammals, but do not become infected until the end of June. There is thus an evident correspondence between the incidence of attacks of malaria during the year and the life and habits of the anopheles. In fact, in spring there are no infected insects, as there are only relapses of fevers of the preceding year; from the spring cases the anopheles take the specific material which, inoculated into man, initiates and develops into the epidemic æstivo-autumnal fever, and the first infected insects are only found towards the end of June, when the new season epidemic begins. The anopheles are then more numerous, and hence the percentage of those infected is also raised in the summer, when attacks are more frequent; in advanced autumn attacks of fever and anopheles decline together, and in winter the epidemic ceases because the majority of insects perish. Dr. Facciolà, however, believes that there is merely coincidence of circumstances and not correlation between these two sets of phenomena, and asks, if it be true that the mosquitoes take the germs of the æstivo-autumnal epidemic from the relapse cases of June, since they are not usually found infected before this period, if relapsed cases are scarce, and if according to Grassi it is difficult to find more than two infected out of a hundred anopheles, even at the period when malaria is most severe, how does it happen that the new epidemic in the first half of July arises in a strikingly sudden manner? Again, at the onset of winter the hibernating females which resist the cold bite from time to time, but not being then infected, how can the primary cases be explained which are sometimes met with during that season? And since during the winter only cases of recurrent æstival fever are usually seen, how is it that all through the spring mild cases continually recur? Dr. Facciolà adduces evidence to show that the theory of a prolonged incubation does not afford sufficient explanation of these phenomena, and believes, on the contrary, that it must be sought in the influence of external heat, and perhaps of some other agent which acts on the organism which is the cause of these fevers. In temperate zones, during the severe heat of summer and part of autumn, the fever becomes more virulent and produces malignant and continuous types. In winter the cold modifies it and it becomes quartan. In spring there is a slight recrudescence of cases, the so-called pre-epidemics of Celli, which, however, are mild. This behaviour and varying characteristics of malarial fevers during the course of the year are comparable with their distribution on the earth; in cold climates the almost exclusive type is the quartan, in the tropics the continuous remittent. Thus, according as the external heat is raised, either with the season in a given climate or by approximation to the equator, it renders the malarial parasites more virulent and less intermittent in their function, because they acquire greater resistance against that unknown state of the blood which determines the suspension of their activity in the apyretic intervals. In this connexion also it may be mentioned how latent germs of malaria in the body are influenced by external environment such as change of residence. This theory is claimed by Dr. Facciolà to explain the severity of the æstivo-autumnal epidemic and the mildness of that in spring. Many of the spring attacks are recurrences of the severe forms of the hot season, resuscitated and transformed into benign types by the warmth; others are recurrences of mild tertians and quartans contracted in the second half of the preceding year, or primary attacks from infection taken in the preceding æstivo-autumnal epidemic. The attacks of the æstivo-autumnal epidemic are in

the majority of instances primary onsets of latent infection in a severe form, others are recurrences of severe forms contracted in the second half of the preceding year, or severe attacks of recent infection and in a less degree recurrences of the mild attacks of the spring of the same year in a malignant form.

THE INDEX AND TITLE-PAGE TO THE LANCET: JANUARY TO JUNE, 1916.

IN view of the Government restrictions upon the supply of paper, and the shortage of paper quite apart from these restrictions, we cannot include, as usual, in all the copies of THE LANCET the Index and the title-page which are due at the end of this month. The Index and title-page will, of course, be prepared, and copies will be supplied gratis to subscribers who intimate their wish to receive them to the Manager, THE LANCET Office, 423, Strand, London, W.C. Such applications should please be sent in at once.

AT a special meeting of the Section of Surgery of the Royal Society of Medicine to be held on Wednesday, July 12th, at 5 P.M., Dr. Fred H. Albee, of New York, will give a cinematograph demonstration of his methods and technique of bone surgery, including bone grafts for Pott's disease, inlay grafts for fracture of long bones, and peg grafts for fracture of the neck of the femur.

THE Cavendish lecture will be delivered by Sir John Bland-Sutton on Friday, June 23rd, at 8.15 P.M., at the West London Hospital. The subject will be: "The Fate of Patients who have had Stones Removed from the Kidney."

THE BELGIAN DOCTORS' AND PHARMACISTS' RELIEF FUND.

A MEETING of the Central Committee of the Fund was held on June 8th, at the office of THE LANCET, when Sir RICKMAN GODLEE, the chairman of the Committee, reported the receipt, through the International Commission for Relief in Belgium and Mr. Herbert Hoover, of an acknowledgment of a cheque for £800 sent by the Committee for distribution to medical men and pharmacists in Belgium. The distribution had been made through the agency of the Aide et Protection aux Médecins et Pharmaciens Belges Sinistrés. This sum was the first of three monthly donations of £800 which it had been agreed by the Committee should be transmitted to Belgium in the manner and for the purpose described. Mr. Hoover enclosed also for the consideration of the Committee a transcript of the proceedings of the Belgian Committee, which sufficiently showed the urgent need of the money sent and the wise way in which it was allocated. The Committee thereupon decided to continue sending these monthly grants for three more months.

Professor H. G. Greenish was elected a member of the Committee, and will coöperate with Dr. Des Vœux in organising the consideration of individual cases of distress of Belgian pharmacists in this country.

The total receipts of the Fund up to June 8th were £19,250.

SUBSCRIPTIONS.

The subscriptions to the Belgian Doctors' and Pharmacists' Relief Fund received since the last list was published are as follows:—

	£	s.	d.
Dr. G. H. D. Carpenter (thirteenth and fourteenth donations—total £14)	2	0	0
Mrs. Victor Williams ...	2	2	0
South-West London Pharmacists' Association, collected by Mr. J. Krall	25	0	0

Subscriptions to the Fund should be sent to the treasurer of the Fund, Dr. H. A. Des Vœux, at 14, Buckingham-gate, London, S.W., and should be made payable to the Belgian Doctors' and Pharmacists' Relief Fund, crossed Lloyds Bank, Limited.

THE FOOD-SUPPLY OF THE GERMAN PEOPLE.

(*Concluded from p. 1186.*)

IN the third chapter of their little practical manual Dr. Kuczynski and Dr. Zuntz deal with the measures necessary to regulate the approaching harvest in the light of the experience gained and set out in the previous chapters (THE LANCET, Feb. 26th and June 10th). The authors assume that the prohibition of exportation of foodstuffs and fodder must be more strictly observed than in the first year of war, and that their importation will be encouraged. They go on to consider the minor administrative details necessary to ensure these ends. *Their arguments, as before, are given in their own words.* Where dates are given the year, if unstated, is 1915.

Control of the fresh supplies of rye, wheat, and oats.—By order of the Government the remaining supplies of wheat and rye were taken over from Feb. 1st, and by an order of Feb. 13th the supply of oats was taken over from Feb. 16th. In consideration of the fact that the new harvest year begins with a reduced supply and that the harvest is unlikely to be so copious as in 1914, the taking over of the harvest from the outset is imperative. By so doing more generous rations will be possible—e.g., farmers will be able to give 10·5 kg. of bread corn a head per month to their labourers and servants in place of the 9 kg. of last February, and keepers of horses can be allowed at least 2 kg. a head of oats for their animals in place of the 1·5 kg. of last year. On March 12th, the supplies of barley were taken over. If the rye, wheat, and oats are controlled this measure may not be necessary, but it could be resorted to if the supplies shrank very seriously, especially as the production of barley groats is to be encouraged to meet the shortage in rice and pulse. There is no ground for prohibiting the making of malt coffee, as that beverage contains about 50 per cent. of the nutriment of the barley.

Observation of the prohibition of the use of bread corn as fodder.—By order of the Government of Oct. 28th, 1914, the feeding of animals with rye and wheat capable of being made into bread, and also with flour was forbidden. On Jan. 6th the prohibition was extended to bruised grain, to rye and wheat mixed with other fruits, to any meal that can be used in bread mixed with flour, and to bread—with the exception of spoiled bread and scraps; and finally scraps that could be used as food were also included. It is conceivable that such prohibitions might be dispensed with if the new harvests were taken over by the Government at the outset, but there would still be the danger that those who were allowed supplies for themselves and others dependent on them would during winter make use of bread corn as fodder. The authors therefore recommend that these prohibitions be made to hold good for the coming harvest year.

Restrictions in connexion with the use of oats as fodder.—By an order of Jan. 21st the use of oats for fodder in any form was forbidden except for solipeds. After the oats had been taken over by the Government on Feb. 16th a certain liberty was allowed for the use of oats in feeding calves, lambs, draught and breeding animals. This liberty may be ventured upon for the new harvest year after a certain daily ration has been assured to each soliped, except in the case of oxen used as draught animals.

Maximum prices for rye and wheat.—The maximum prices fixed in October, 1914, for rye and wheat were higher than the average prices of the last 40 years, and the majority of the population would probably wish them to be reduced. It is, however, to be borne in mind that for various reasons the coming harvest is likely to be a moderate one, and therefore a lowering of the maximum prices cannot be recommended. At the same time, the maximum prices should not be raised unless the average yield per hectare should be lower than the average of the last ten years. In any case, a raising of prices should not take place, the authors think, immediately after the harvest, lest such an action should lead to the retarding of threshing and the holding back of cereal supplies.

Fixing of a moderate maximum price for barley and oats.—In Oct., 1914, the maximum price per ton of inland barley whose weight per hectolitre was not more than 68 kg. was lower than that of rye by M. 13 to M. 15 in barley

producing districts, and M. 10 in districts where the barley was used as fodder, the object being to protect the rye stores. The plan of leaving the heavy barley free from price restrictions resulted in the almost total disappearance of light barley from the market and a great rise in price of the other kinds. Whereupon the maximum price of all inland barley was made equal to that of rye (Dec. 19th, 1914). To lighten the burden for retailers the sale of barley up to three tons was not restricted as to price. When the barley was taken over by the Government the maximum price was raised by M.50, and the special price for sale up to three tons was also raised. This was done in order to compensate the barley dealers who could no longer sell small quantities at their own prices, and also to give the farmers whose barley had been taken the opportunity of dealing in other fodder materials of high value.

On Oct. 29th it was officially declared in the *Norddeutsche allgemeine Zeitung* that no maximum price was necessary for oats, as the military authorities had so far been able to supply their needs at suitable prices; but on Nov. 5th, 1914, a maximum price was fixed which was from M. 3 to M. 17 per ton lower than that of rye. On Dec. 19th, 1914, it was announced that these prices did not hold good for sales to retailers or consumers of not more than three tons, but when the supplies were taken over by the Government the maximum for such sales was raised by M.50. For the new supplies the authors agree that it seems desirable, owing to the altered circumstances, for the maximum prices of oats and barley to be at least as low as that of rye.

Retaining of the regulations for grinding corn into bread flour.—According to the regulation of Jan. 5th, rye flour was to contain at least 82 per cent. of the rye, and wheat flour 80 per cent. of the wheat. The district authorities can now allow the wheat and rye to be ground in such a way as to produce 10 per cent. of superfine flour. By an order of April 29th the Government decreed that produce should be allowed to the semolina factories, of which there are about 10 or 15 in Germany, for the manufacture of semolina. The authors recommend that these regulations be adhered to at any rate for the first six months of the new harvest year, in spite of the growing scarcity of bran. After six months or so, if the cereal supplies are ample, the flour may be allowed to contain a lower percentage of the grain, to provide a supply of bran and also the luxury of finer flour.

Simplification of the regulations controlling flour-mixing and bread-making.—According to a measure of Jan. 5th only fine wheat flour might be sold unmixed. Other wheat flour must contain 30 per cent. of rye flour, and this must not be superfine rye flour. Bread might not be baked from unmixed wheat flour, or from unmixed superfine flour of either wheat or rye. Wheat bread must contain 30 per cent. of rye, and may further contain up to 20 per cent. of potato flour. Bread might be made entirely of rye flour if that flour contained at least 93 per cent. of the grain. Otherwise it must be mixed with potato flour, which might itself be mixed with barley, oat, or rice flour, &c. For the new harvest these regulations can be simplified. By the forbidding of baking at night and consequent prevention of a superfluity of white bread, the baking of bread from pure wheat flour has been rendered allowable for the future. The mixing of potato flour with rye flour should be continued, but for the first few months there should be a prohibition on the use of the various forms of dried potatoes, so that the fresh potatoes, which decrease in nutriment by keeping, should be used first. The scanty supplies of rice, maize, pulse, &c., should be kept entirely for household use. In baking bread, superfine flour, either of wheat or rye, should not be used. Rye bread may be made from unmixed rye flour containing at least 93 per cent. of the grain. Finer rye flour must only be used when mixed with mashed or grated potatoes, and the percentage of potato to rye flour must be, weight for weight, at least as 25 is to 75. In making rye bread no wheat flour must be used, and up till March 1st, 1916, no preserved potatoes.

Increasing of the flour-rations of the population entitled to maintenance.—On Feb. 9th the rations allowed for people entitled to maintenance was 225 grammes per head daily, and on March 3rd this was reduced to 200 gm. For the future, even if the harvest should be a very poor one, at least 250 gm. may be allowed per head. In case of a satisfactory harvest it is possible that the accustomed allowance of 340 gm. may be allowed, but the authors emphasize the fact that care is necessary not to increase the rations to such an extent that the people, who have grown accustomed to a careful use of bread, should be encouraged to grow careless. A ration of 250 gm. to 300 gm., according to the yield of the harvest, is to be recommended, and it may be left to individuals how much shall be used as flour and how much baked into bread.

Control of the potato-supply.—To prevent the mistakes of last year in this matter a careful regulation of the potato crops must be made at the outset. In the opinion of the authors it is desirable that large quantities of potatoes should be dried immediately. While their nutritive value is highest—i.e., when they are freshest—it is well to use the overplus freely for fattening pigs. The central authority, however, must without delay make arrangements for buying up all the stores that will be necessary for the population, according to information supplied by the communes, allowing a minimum of 1 pound a head daily. The central authority should further guarantee the necessary potato-supplies to the drying factories, and the latter should be obliged to store their dried potatoes until March 1st, while the former must arrange a loan up to three-quarters of the maximum price which is reckoned from the maximum price of the fresh potatoes and the cost of drying. By a stock-taking before March 1st the central authority will be able to decide what quantities of dried potatoes must be reserved for human consumption, and what can be set aside for fodder.

Maximum price for eating-potatoes.—By an order of Nov. 23rd, 1914, the maximum price of potatoes for cooking was fixed at from M. 50 to M. 61 a ton, according to the kind and the district. On Feb. 15th this was raised by M. 35 a ton to limit their use as fodder and so increase the supply. On April 15th a tax for damage, storage, loss, &c., was allowed when supplies were sold to the Government, communes, &c., which began at M.20 a ton, and increased to M.60 in June. The original maximum prices were fairly low, the later very high, and the indemnification for storage, &c., was much too high. The authors consider that it would be advisable to fix a maximum price after the next harvest in case of copious supplies at not much over that of November, 1914, and in case of a poor crop at about that of February, with an additional payment of storage similar to that of last April, and only moderately rising.

Maximum prices for pigs.—By an order of Feb. 25th a maximum price for pigs of from 60 to 100 kg. was fixed at M. 49 to M. 66 per 50 kg. according to weight in life. In May this price was raised, and since then the price for fattened pigs has risen to over M. 100 per 50 kg. This price corresponds to a price of barley of over M.364 a ton, and of potatoes of over M.93 a ton. As a maximum price for barley (unless the harvest should fail) has been recommended at M.220 to M. 237, and that for potatoes at M.60 to M.70, the maximum price of pigs if adjusted to these prices should be from M 60 to M.65 per 50 kg. From December onwards, to cover a suitable profit for the producers, the maximum price might be fixed at from M.70 to M.75 per 50 kg. This reduction in price must be brought about gradually. If sufficient supplies cannot be bought at these prices for the needs of the people, a power of compulsion must, the authors contend, be made over to the communes, by which power also an immoderate use of foodstuffs as fodder can be avoided.

Wholesale and retail maximum prices.—If the producers are obliged to adhere to the regulation of prices it is only fair that the consumers should also be bound by them. Maximum prices must therefore be fixed for retailers also, and must be reckoned according to the conditions obtaining in any given place.

Prevention of damage caused by wild creatures.—The damage to the harvest caused by rabbits, pigs, roebuck, deer, &c., must be strenuously guarded against. Indemnification for loss does not compensate for the shortened supplies. Hitherto the local authorities have had more interest in the hunting tenants than in the feeding of the population. The landowners must be empowered to kill the game that harm the crops, and if the local authorities refuse to grant this right the authors would advise facilities for a prompt appeal to a higher court.

Foodstuffs to be obtained from trees and forests.—The State forests are already free for the obtaining of fodder and the supporting of pigs, and private forests must also be thrown

open for the gathering of the fruits by women and children, or the feeding of pigs, according to the local conditions. The leaves of trees, hedgerows, &c., in the roads must also be widely used as green fodder and, when dried, as hay, particularly in localities where the hay crop is sparse. The hay should be made at once while the leaves are at their best. It is now the time also to make preparations for obtaining the nutriment from winter sap-wood both in setting up mills and in establishing chemical methods of extracting the nutriment, by boiling and by pressure. Besides the direct use of the prepared sap-wood as fodder there is the conversion of the cellulose into sugar with its accompanying gain in alcohol by methods which have already been discussed. This has the further advantage that the distilleries will use fewer potatoes, and the authors emphasise the advisability of removing as soon as possible the legislative and technical difficulties which lie in the way of the production of alcohol from wood and similar substances.

Compulsory notification of the harvest yield, and of occasional supplies.—Up till the present the harvest yields of single holdings have not been recorded, indeed, reports had merely been made in November of each year of the average yield per hectare in the various fruits. During the first year of the war, however, it became necessary to have more exact information, and by an order of Feb. 1st all who possessed stores in wheat, rye, oats, and flour were obliged to notify to the authorities in whose district the supplies were stored. This compulsory notification must be extended after the next harvest. Immediately after the bringing in of the crops their quantities must be notified, and this must apply to all kinds of fruits. By an order of Feb. 2nd a stocktaking of the stores of the food-stuffs and fodders was to be made every quarter, and the incomplete or false notification of stores was to be severely punished. The intervals allowed for the authorities to collect these numbers should, the authors think, be as short as possible.

The counting of the cattle.—In 1913 and 1914 the live-stock in general were counted on Dec. 1st, 1914, and the pigs on June 2nd. In the first half of 1915 there were two countings of the pigs. These countings were not sufficiently frequent, while the voluntary appointment of a date for counting might easily lead to false results. Owing to the fact that from April 15th the Government has neglected to order a census of the pigs, it is at present unknown how far the numbers have increased since the last census was taken. It is advisable, therefore, that while the war lasts a census of agricultural animals should be taken on August 1st, Dec. 1st, and April 1st; and further, a census of pigs on Oct. 1st, Feb. 1st, and June 1st. The next count should take place at latest on August 1st. These counts can be simple ones, but a further count should be made of milch cows and special counts of pigs of under 8 weeks, one of pigs of from 8 weeks to 6 months, one of pigs from 6 to 12 months, including breeding boars and breeding sows, and one of pigs of one year or more, including both sexes of breeding pigs.

THE SERVICES.

ARMY MEDICAL SERVICE.

Lieutenant-Colonel A. L. A. Webb, C.M.G., to be Deputy Assistant Director-General, vice Lieutenant-Colonel H. P. W. Barrow.

ROYAL ARMY MEDICAL CORPS.

H. G. G. Cook to be temporary Lieutenant-Colonel whilst in charge of the Welsh Hospital, Netley.

Temporary Captain Alic Phillips to be temporary Major.

Temporary Captain R. C. Brown, relinquishes the rank of temporary Major on ceasing to be employed at the Springburn and Woodside Hospital, Glasgow.

Temporary Captain E. Black to be Major.

Temporary Lieutenant T. H. T. Frampton to be temporary Major.

Temporary Lieutenants to be temporary Captains: T. M. M. Horsfall, F. M. Kirwan, J. H. Robertson, L. F. E. Jeffcoat, D. Kelly, H. Webb, R. J. Bruce, W. S. Pickup, K. M. B. Simon, D. A. Hutcheson, H. Bates, F. E. McGee, E. I. P. Pellew, W. H. McKinstrey, W. E. L. Fowler, E. R. Welsh, H. S. Millar, T. L. Kenion, W. M. Thunder, G. R. C. Wilson, B. Beamish, T. MacKinlay, W. H. Hardy, C. C. G. Gibson, N. G. Meade, B. S. Taylor, R. T. Herdman, A. D. Forbes, J. E. M. Wigley, J. Macqueen, H. B. Elton, J. D. Wilkinson, S. Cross, B. Cuppage, A. J. Davoren, H. Blundell, A. Cameron, R. Donald, F. W. Fawssett, A. U. Millar, A. B. McPherson, A. R. Moore, W. Oliver, V. J. Ruttledge, T. Readman, H. D. Smart, H. K. Wallace, J. J. K. Pentony, J. N. Martin, A. Farquhar, G. Habgood, G. H. Thompson, B. M. Hunter, A. H. Thomas, I. H. S. Hawes, W. A. Wheeldon, A. Whitby, G. W. Stanley, T. H. Fowler, A. J. Dempsey, T. Bennett, C. L. Lakin, R. Grant, G. W. B. Waters, J. R. Burn, B. N. Norman, S. H. Booth, J. J. Foley, W. J. Jameson, J. E. Forster, P. L. Watkin-Williams, J. C. Osburne, H. B. Wilson, E. J. Tyrrell, J. D. Benjafield, R. Power, A. E. Henton, W. R. Honeyburne, W. J. G. Henderson, W. Cooper, J. F. West, G. Clarke, J. M. Coates, C. W. Wilson, M. J. Gallagher, S. Batchelor, R. Hamilton, H. W. Binks, G. J. Fraser, H. S. Groves, L. R. Lempriere, R. McLean, G. McNeill, A. Verling, A. S. Wilson, W. F. Rhodes, F. E. Chapman, G. Hamilton, M. Macnicol, P. Templeton, E. R. Lyth, F. M. Harvey, T. B. Evans, F. R. Brown, A. McL. Cato, E. G. Goldie, J. M. D. Mitchell, G. P. Taylor, J. C. Michell, J. Low, E. B. Collings, J. Anderson, E. S. White, T. T. Apsimon, H. G. Davison, J. Clark, T. Kirkwood, A. E. Thompson, A. B. Northcote, H. R. Hurry, F. W. W. Griffin, A. N. Clemenger, D. C. Evans, R. R. Scott, L. W. Shelly, I. Alluan, J. L. Williams, F. E. Reynolds, C. B. Heald, J. Cunningham, L. G. McCune, B. G. Klein, W. T. Buchan, E. Coleman, J. Proctor, D. C. Welsh, W. L. Christie, J. L. Dimond, D. A. Powell, R. H. Drennan, W. A. Easton, H. P. Sheppard, A. Massey, W. R. Meredith, J. Corcoran, F. B. Gurd, P. M. O'Sullivan, L. E. Williams, D. E. S. Wishart, G. Allison, H. C. Martin, T. D. Cumberland, R. C. Coatsworth, M. E. Gorman, T. H. Crews, H. P. Hamilton, F. W. Clement, W. Edmonson, C. Salkeld, A. J. Clayton, J. K. M. Dickie, H. W. Scott-Wilson, L. A. Carr, J. T. Courtice, H. A. Cates, A. E. Lyster, L. E. Ashley-Emile, R. Nunn, N. W. Jenkin, A. J. Lewis, H. J. McCurrich, P. A. Doyle, K. B. J. Vickers, G. B. Crawford, D. Fettes, B. N. Sinclair, J. L. Callaghan, W. H. Brown, A. S. Richmond, D. A. Fletcher, G. M. Shaw, J. V. Williams, H. G. Murray, C. H. MacLean, M. Manson, H. W. Scawin, M. O'Brien, K. Fraser, W. D. Lawrie, W. S. Campbell, N. A. A. Hughes, L. W. Evans, R. N. Porritt, D. W. Torrance, R. I. Douglas, J. B. Scott, C. A. Brisco, F. W. Campbell, P. R. Browning, C. W. Green, W. J. B. Brown, J. F. Ryan, G. B. Burwell, E. F. G. Ward, D. A. Macfarlane, K. E. Millan, J. S. Stewart, N. M. Grace, G. S. Cronk, W. F. Clark, J. H. Box, A. G. Howson, H. L. Jarman, W. J. Symes, M. A. Collins, W. J. Grant, and G. A. Greaves.

To be temporary Captains: B. J. Collingwood, T. L. Wormald, A. W. C. Lindsay, D. Macnish, and H. F. Strickland.

Temporary Honorary Lieutenants to be temporary Honorary Captains while serving with No. 6 British Red Cross (Liverpool Merchants' Mobile) Hospital: H. Browning, H. W. Jones, and F. C. Wilkinson. E. M. Eaton to be temporary Honorary Captain whilst serving with No. 2 British Red Cross Hospital.

Temporary Honorary Lieutenants to be temporary Lieutenants: P. A. Dargan, L. M. Davies, and L. W. Jones.

To be temporary Lieutenants: J. N. Cruikshank, A. Davidson, J. B. Fisher, M. M. Frew, T. R. Fulton, G. Kirkhope, D. Kennedy, W. N. Montgomery, W. C. Gore, R. E. J. St. John Griffin, J. S. Kinross, D. W. Smith, P. G. Russell, E. H. Eastwood, N. B. Capon, C. E. Wise, F. W. Clark, J. Jaffé, J. B. P. McLaren, O. C. M. Davis, J Devine, J. Cross, J. Glaister, Z. A. Green, H. R. Tighe, T. W. Bailey, J. Crean, A. G. L. Smith, J. G. Forbes, R. O. Lee, D. H. A. Galbraith, S. F. Harris, C. R. Reckitt, J. W. Thomas, T. H. Jackson, W. S. King, T. O. Robson, A. E. Burroughs, W. H. T. Jones, J. A. Giles, E. N. Glover, H. J. C. Gibson, J. A. Edmond, E. J. Mannix, E. Lanzon, and R. B. Bryan.

To be temporary Honorary Lieutenants: F. C. Ormerod, A. G. Morris, D. G. C. Tasker, S. Hutchinson, and A. J. Bado.

Temporary Lieutenants relinquishing their commissions:—L. B. Graham, J. J. McConnell, H. H. R. Clarke, T. H. Harker, H. G. G. Jeffreys, S. E. Holder, G. E. Kinnersley, J. MacDonald, J. L. Atkinson, M. J. McCarthy, D. Moodie, J. Rae, M. S. Fraser, D. G. Perry, R. Hamer, W. H. MacKinlay, G. Gardner, R. Spears, T. G. Elsworth, J. P. Kitson, A. S. McNeil, J. Jones, P. K. Muspratt, H. W. Kerfoot, J. A. Evans, R. H. Bonnycastle, G. A. Wyon, J. Coffey, J. T. Dickson, J. M. Taylor, F. Radcliffe, W. Stewart, P. MacDonald, W. J. M. Marcy, R. L. B. Smith, E. V. Frederick, and A. W. G. Murray. R. M. Chance on account of ill-health.

Canadian Army Dental Corps: Captain F. A. Harwood (Canadian Militia) to be temporary Captain.

TERRITORIAL FORCE.

Royal Army Medical Corps.

Welsh Border Mounted Brigade Field Ambulance: Captain F. H. Lacey, from a General Hospital, to be Captain. Lieutenant D. P. H. Gardiner to be temporary Captain.

Home Counties Casualty Clearing Station: Lieutenants to be Captains: T. W. Hancock, W. L. Hibbert, A. G. Williams, and H. R. Parsloe. L. A. Célestin and F. F. T. Hare to be Lieutenants.

East Lancs Field Ambulance: Lieutenant A. W. Berry to be Captain.

London Mounted Brigade Field Ambulance: Lieutenant F. P. Smith to be Captain.

South Eastern Mounted Brigade Field Ambulance: Major F. B. Treves to be temporary Lieutenant-Colonel whilst commanding a Field Ambulance.

London Field Ambulance: Captain (temporary Major) J. W. Bird to be Major. Major J. W. Bird, D.S.O., to be temporary Lieutenant-Colonel.

Welsh Field Ambulance: Major H. T. Samuel to be temporary Lieutenant-Colonel whilst commanding a Field Ambulance.

Highland Casualty Clearing Station: Captain A. Don to be temporary Major. Captain (temporary Major) J. Innes relinquishes his commission on account of ill-health. A. E. Campbell, late temporary Lieutenant, R.A.M.C., to be Lieutenant.

London Sanitary Company: Lieutenant P. E. Lander to be Captain.

Lowland Casualty Clearing Station: Major J. McKie, from a Field Ambulance, to be Major. Major J. McKie to be Lieutenant-Colonel.

West Riding Casualty Clearing Station: Major L. P. Demetriadi to be temporary Lieutenant-Colonel.

Welsh Casualty Clearing Station: Major A. P. Swanson, from Attached to Units other than Medical Units, to be Major. Major A. P. Swanson to be temporary Lieutenant-Colonel.

London (City of London) Sanitary Company: The undermentioned Lieutenants to be Captains: R. J. S. McDowall, S. A. Mann, and J. P. Elias.

Highland Field Ambulance: J. Anderson to be Lieutenant.

Lowland Field Ambulance: T. M. Metcalfe to be Lieutenant.

Eastern General Hospital: Lieutenant-Colonel J. B. Bradbury resigns his commission.

Southern General Hospital: Major R. Coombe is restored to the establishment.

East Anglian Field Ambulance: Lieutenant W. K. Legassick to be Captain and remain seconded.

Home Counties Field Ambulance: Captain G. Eustace, from Attached to Units other than Medical Units, to be Captain.

North Midland Field Ambulance: Captain F. W. Johnson to be temporary Major.

Northumbrian Field Ambulance: Robert Welch and John Searle Burton to be Lieutenants.

London General Hospital: Lieutenant-Colonel W. Pasteur is seconded for duty at a Military Hospital.

Attached to Units other than Medical Units.—Major R. W. Forrest relinquishes his commission on account of ill-health. Captain E. P. I. Coke relinquishes his commission on account of ill-health. Captain H. G. L. Allford, from a Field Ambulance, to be Captain. Lieutenants J. B. Smith and E. T. Roper to be Captains.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

IN the 96 English and Welsh towns with populations exceeding 50,000 persons at the last Census, 7975 births and 3998 deaths were registered during the week ended Saturday, June 10th. The annual rate of mortality in these towns, which had declined from 17·0 to 12·5 per 1000 in the six preceding weeks, further fell in the week under notice to 12·0 per 1000 of their aggregate civil population estimated at 17,312,295 persons for the year 1915. During the first ten weeks of the current quarter the mean annual death-rate averaged 14·9, against 14·5 per 1000 in London. Among the several towns the death-rate last week ranged from 5·1 in Enfield, 5·8 in Ilford, 6·1 in Aberdare, 6·3 in Walthamstow, and 6·5 in Wakefield, to 17·6 in Ipswich and in Sunderland, 18·1 in Oxford, 19·1 in Gloucester, 20·3 in Gateshead, and 20·7 in Stockton-on-Tees.

The 3998 deaths from all causes were 165 fewer than the number in the previous week, and included 300 which were referred to the principal epidemic diseases, against 326 and 335 in the two preceding weeks. Of these 300 deaths, 102 resulted from whooping-cough, 70 from measles, 63 from infantile diarrhœal diseases, 52 from diphtheria, 9 from scarlet fever and 4 from enteric fever, but not one from small-pox. The annual death-rate from these diseases was equal to 0·9, against 1·0 per 1000 in each of the two preceding weeks. The deaths attributed to whooping-cough, which had been 128, 131, and 125 in the three preceding weeks, fell to 102, and included 22 in London, 13 in Birmingham, 11 in Manchester, and 4 each in West Ham and Liverpool. The deaths referred to measles, which had been 103, 85, and 104 in the three preceding weeks, fell to 70, of which 24 were recorded in London, 6 each in Birmingham, Manchester, and Sheffield, and 4 each in West Ham, Stoke-on-Trent, and Liverpool. The fatal cases of diarrhœa and enteritis (among infants under 2 years), which had been 62, 53, and 58 in the three preceding weeks, rose to 63; 14 deaths belonged to London, 4 to Leeds, and 3 each to West Bromwich, Birmingham, Manchester, and Sunderland. The deaths attributed to diphtheria, which had steadily declined from 65 to 32 in the eight preceding weeks, rose to 52, and included 11 in London, 5 in Middlesbrough, 4 in Liverpool, and 3 in Carlisle. The deaths referred to scarlet fever, which had been 15, 16, and 8 in the three preceding weeks, numbered 9, of which 2 occurred in London and 2 in Liverpool. The 4 fatal cases of enteric fever were three below the average in the earlier weeks of the quarter, and included 2 deaths in London.

The number of scarlet fever patients under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, which had steadily declined from 1778 to 1343 in the nine preceding weeks, further fell to 1313 on Saturday last; 166 new cases were admitted during the week, against 139, 161, and 163 in the three preceding weeks. These hospitals also contained on Saturday last 1274 cases of diphtheria, 211 of whooping-cough, 191 of measles, 37 of enteric fever, and 1 of small-pox. The 968 deaths from all causes in London were 49 in excess of the number in the previous week, and corresponded to an annual death-rate of 11·7 per 1000. The deaths referred to diseases of the respiratory system, which had fallen from 405 to 117 in the 12 preceding weeks, rose to 130 in the week under notice.

Of the 3998 deaths from all causes in the 96 towns, 149 resulted from violence, 329 were the subject of coroners' inquests, and 1210 occurred in public institutions. The causes of 27, or 0·7 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest. All the causes of death were duly certified in Sheffield, Leeds, West Ham, Bradford, Newcastle-on-Tyne, and in 75 other smaller towns. Of the 27 uncertified causes, 6 were registered in Liverpool, 5 in Manchester, and 2 each in Darlington and Gateshead.

HEALTH OF SCOTCH TOWNS.

In the 16 largest Scotch towns with an aggregate population estimated at 2,372,000 persons at the middle of this year, 1120 births and 586 deaths were registered during the week ended Saturday, June 10. The annual rate of mortality in these towns, which had been 15·0, 14·4, and 14·7 per 1000 in the three preceding weeks, fell to 12·9 per 1000 in the week under notice. During the first ten weeks of the current quarter the mean annual death-rate in these towns averaged 16·0, against 14·9 per 1000 in the large English towns. Among the several towns the death-rate last week ranged from 6·1 in Falkirk, 8·9 in Leith and in Kirkcaldy, and 9·8 in Kilmarnock, to 15·6 in Ayr, 16·1 in Motherwell, and 16·2 in Dundee,

The 586 deaths from all causes were 82 less than the number in the previous week, and included 52 which were referred to the principal epidemic diseases, against 66 and 54 in the two preceding weeks. Of these 52 deaths, 13 resulted from measles, 12 from infantile diarrhœal diseases, 10 from scarlet fever, 9 from whooping-cough, 6 from diphtheria, and 2 from enteric fever, but not one from small-pox. The annual death-rate from these diseases was equal to 1·1, against 0·9 per 1000 in the large English towns. The deaths attributed to measles, which had been 25, 34, and 26 in the three preceding weeks, fell to 13, of which 9 were recorded in Glasgow and 2 in Dundee. The deaths of infants (under 2 years) from diarrhœa and enteritis, which had been 4, 10, and 7 in the three preceding weeks, rose to 12, and included 5 in Glasgow, and 2 each in Dundee and Motherwell. The fatal cases of scarlet fever, which had been 4, 3, and 5 in the three preceding weeks, rose to 10, and included 3 each in Edinburgh and Paisley. The deaths attributed to whooping-cough, which had been 17, 9, and 10 in the three preceding weeks, numbered 9, of which 5 occurred in Glasgow and 2 in Motherwell. The 6 deaths referred to diphtheria were equal to the average in the earlier weeks of the quarter, and comprised 3 in Edinburgh, 2 in Glasgow, and 1 in Falkirk. The fatal cases of enteric fever were recorded in Glasgow and Dundee.

The deaths referred to diseases of the respiratory system, which had been 106, 101, and 83 in the three preceding weeks, rose to 92 in the week under notice, but were 34 below the number registered in the corresponding week of last year. The deaths from violence numbered 20, against 18 and 34 in the two preceding weeks.

HEALTH OF IRISH TOWNS.

In the registration area of Dublin 219 births and 139 deaths were registered during the week ended Saturday, June 10th. The deaths corresponded to an annual death-rate of 17·7, against 11·7 in London and 12·9 per 1000 in Glasgow.

Of the 139 deaths of all ages, 22 related to infants under 1 year and 26 to persons aged 65 years and upwards. The

deaths referred to the principal epidemic diseases numbered 7, and comprised 3 from infantile diarrhœa, 2 from measles, and 1 each from scarlet fever and whooping-cough.

The causes of 2 deaths were uncertified, and 5 others were the subject of coroners' inquests, while 54, or 39 per cent., of the total deaths occurred in public institutions.

During the same period 192 births and 126 deaths were registered in the city of Belfast. The deaths were equal to an annual rate of 16·3, against 16·0 per 1000 in the previous week, and included 21 of infants under 1 year and 24 of persons aged 65 years and upwards. The deaths from the principal epidemic diseases numbered 6, and included 3 from measles, and 1 each from scarlet fever, whooping-cough, and infantile diarrhœa. The causes of 3 deaths were uncertified, and 1 other was the subject of a coroner's inquest, while 29 of the total deaths occurred in public institutions.

Obituary.

ELFRED CHALMERS AUSTIN, F.R.C.S. EDIN., M.R.C.S. ENG., L.R.C.P. LOND.,

TEMPORARY HONORARY CAPTAIN, R.A.M.C.

THE death occurred early on the morning of June 5th, at the age of 39 years, of Dr. E. C. Austin, medical superintendent of the Withington Hospitals of the Manchester board of guardians. Just over six weeks ago Dr. Austin contracted pneumonia; a week later both lungs were affected, empyema and finally pneumococcal septicæmia supervening.

A student of St. Mary's Hospital Medical School, London, he qualified in 1899, taking the Edinburgh Fellowship four years later. He first held the post of resident obstetric officer to his own school hospital, and later he was house physician to the Leicester Infirmary and Fever House, and afterwards assistant medical superintendent at the Kensington Union Infirmary. For a time he was in general practice at Barnard Castle, but he gave this up about four years ago, on appointment as medical superintendent of the Hope Hospital under the Salford board of guardians. In March, 1915, on the resignation, through ill-health, of Dr. S. Orchard, since deceased, he was appointed by the Manchester guardians medical superintendent of their Withington hospitals; the guardians a few months since decided to transfer the Withington hospitals for use as a war hospital, and at the time Dr. Austin's illness began he was busily engaged on the consequent reorganisation, having been granted a temporary honorary commission as captain in the R.A.M.C. whilst in charge. He published in THE LANCET in 1904 an "Account of 70 Cases of Lobar Pneumonia, with Analysis of Clinical Features and Post-mortem Changes," and it is a melancholy coincidence that he should himself have fallen a victim to a disease in which he took a keen scientific interest. He was a hospital administrator of great experience, keenly interested in surgery, and himself a good operator.

He leaves a widow and two small daughters to deplore their loss.

PROFESSOR SILVANUS THOMPSON.

THE death of Silvanus Phillips Thompson, professor of physics in the City and Guilds Technical College and Principal of the College at Finsbury, took place suddenly on Monday last. Professor Silvanus Thompson was best known as a singularly clear exponent of electrical science, particularly in regard to its many applications to practical affairs. He was a most convincing demonstrator at the lecture table, and his experiments were invariably brilliantly carried out. He was author of several works on practical electricity, dynamos, arc lamps, telegraphy, telephony, and so forth, while latterly he turned a good deal of his attention to the improvement of modern lighting methods. He was first President of the Illuminating Engineering Society, a position he occupied for five years. The valuable services he rendered to the cause of good lighting are very generally recognised. He was particularly active in helping the development of the system of lighting known as the "eye-rest" system. Many of the beautiful examples of artificial internal illumination in our public buildings, in which the light is directed on the object and not on the eye, are due to Professor Silvanus Thompson's studies on the subject and his powerful advocacy of the method. His researches covered a wide ground, so much so that he was generally regarded to be a good all-round physicist.

Correspondence.

"Audi alteram partem."

THE TREATMENT OF GONORRHŒA: A SUGGESTION.

To the Editor of THE LANCET.

SIR,—The results of ordinary methods of treatment of gonorrhœa of the urethra are not infrequently so unsatisfactory that one is tempted to wonder whether the system of "continuous irrigation" applied so successfully to that malignant affection, gonorrhœal ophthalmia (when coming under notice at an early stage), might not be applied in a modified manner to urethral gonorrhœa. Continuous irrigation on the lines adopted for gonorrhœa of the conjunctiva, though very desirable, would not, I fear, be feasible for the urethra, requiring, as it would, the tying of a catheter into the urethra, elaborate arrangements for conducting the irrigating fluid to and from the urethra, and the confinement of the sufferer strictly to bed so long as irrigation is being carried out. The feasibility of continuous irrigation on these lines has, doubtless, been carefully considered also by others, but regretfully dismissed as impracticable, as by myself.

Continuous irrigation in a modified form.—In its ideal form this form of treatment may be impracticable, as ideals often are, but could we not compromise, attempting a modified form of this method of treatment by the very frequent use of some bland, slightly astringent solution introduced into the urethra by means of a small metal or glass syringe. The treatment should, I consider, be started as early as possible after the disease has been noticed, the irritability of the urethra to be first overcome, if necessary, by the use of a local anodyne and of a morphia suppository, this preliminary treatment to be performed only by the attendant or nursing orderly. The patient should, I think, use the syringe every 15 minutes, injecting sufficient solution each time to gently distend, without using too much force, the penile portion of the urethra.

Removal of toxins.—The constant washing away of toxic material could not fail, one would think, to be beneficial, and might tend, I imagine, to prevent that deep excoriation of the mucous membrane of the urethra, which is presumably associated with a prolonged contact of toxins with the mucous membrane, and which is possibly the precursor of those troublesome strictures so commonly met with in the later stages of severe cases of gonorrhœa. Again, is it not through these deep lesions of the mucous membrane that the bacteria gain access to the blood and to the lymph streams, and if we could, by the constant washing away of toxins, prevent these severe surface lesions, is it not possible that many of the troublesome sequelæ of gonorrhœa might be averted?

Difficulties will be met with even in starting the simple method of treatment now advocated, but it seems to me that it should be possible, with patience, to overcome them. For example, it is certain that the objection will be raised that the patient could not be relied on to carry out the syringing as often as is desirable. Supervision will, of course, be necessary, but if the patient has been sufficiently impressed with the dread possibility of slowly narrowing strictures and of gonorrhœal arthritis and other troublesome sequelæ, and if, on the other hand, he be encouraged to hope that by the diligent use of the syringe he may not merely escape these dangers, but is likely to shorten his stay in bed and detention in hospital, and thus to reduce the sum to be deducted from his pay for hospital stoppages, it will, I think, be found that the patient is willing heartily to coöperate. Time sometimes hangs heavy on the hands of a man kept in bed for what is, in the early stages of the disease, only a local affection. If given something useful to do the time will possibly pass more quickly than if left to himself to brood over his misfortunes. Needless to say, the patient should always be warned as to the danger of conveying infection from the urethra to the eyes, and should be instructed to invariably wash the hands after using the syringe, the latter article always to be placed into antiseptic lotion after use.

Douching by nursing orderlies.—By all means let the occasional irrigation by nursing orderlies using douche cans with

rubber pipes and glass nozzles be continued; this procedure, if not performed with too great a pressure of fluid, cannot fail to do good, and may serve to impress the patients with the necessity for the thorough washing away of the foul material lying in the urethra. When there are many patients to attend to and much ward work to do other than irrigation, it is, in my experience, difficult for the nursing orderlies to perform the irrigation as often as is desirable. Patients therefore should be encouraged to carry on the good work with the syringe in the intervals. The extra expense involved in the purchase of syringes may perhaps be an objection. If, however, the stay of the patient in hospital be shortened as a result of the treatment, as I strongly feel will be the case, the effect will be not a loss but a saving of time and money.

I bring this system forward for consideration in the belief that it cannot do harm and may, if thoroughly carried out, do much good, so answering to the requirements considered, it is said by Hippocrates, the old-time healer, to be essential to a good remedy.—I am, Sir, yours faithfully,

J. W. S. SECCOMBE,
June 10th, 1916. Major, R.A.M.C.

TESTS FOR DIACETIC ACID AND FOR ACETONE IN THE URINE.

To the Editor of THE LANCET.

SIR,—In his interesting paper on "A Case of Acute Diabetes, with Comments, especially in regard to Acidosis," in THE LANCET of June 3rd, Dr. Walter G. Smith gives as an example of "errors culled from text-books" the statement that certain substances, for instance, salicylic acid, give the same reaction in the urine as diacetic acid gives (with perchloride of iron solution). He adds that the reaction is somewhat similar, but that *no practised eye would confound the colours*. I wish to call attention to the fact that the urine of a patient taking salicylates may be made, by the addition of a solution of perchloride of iron, to give *exactly the same tawny port-wine colour* as that which is often regarded as a sure sign of the presence of diacetic acid in the urine.[1] It depends on the relative quantities of the reagent and of the salicylic contents of the urine, whether the tawny port-wine colour or the more usual bluish-red colour is produced. In another place (p. 1117) Dr. Smith says, "Both creatinin (Weyl) and acetone respond to Legal's test." Surely the great point made by E. Legal (1883), when he used the nitroprusside test for creatinin (Weyl) as a test for acetone in the urine, was to finish up the test by adding acetic acid in order to get rid of the colour, or the confusing portion of the colour, due to the necessary presence in the urine of creatinin.[2]

I am, Sir, yours faithfully,
Harley-street, W., June 13th, 1916. F. PARKES WEBER.

THE INFLUENCE OF DIET ON THE DEVELOPMENT OF CAMMIDGE'S REACTION IN THE URINE.

To the Editor of THE LANCET.

SIR,—It is gratifying to learn from the annotation appearing in THE LANCET of June 10th under the above heading that, although it is now over 12 years since I first described the so-called pancreatic reaction in the urine, it is still of sufficient interest to merit investigation and comment. I am naturally pleased to see that the recent observations made by Dr. C. J. C. Van Hoogenhuyze and Dr. S. Nagasaki confirm its clinical value, but it would seem from some of the statements made that they are not acquainted with many of the developments whch have taken place since my original publication. In order to remove some of the misapprehensions to which your annotation may possibly give rise, I should like to point out (1) that Howard and I proved in 1914[3] that the "pancreatic" reaction is due to the presence in the urine of a dextrin, the formula of which we gave; (2) that the reducing substance split off on hydrolysis with hydrochloric acid is a pentose—viz., xylose—and that the "pancreatic" crystals are consequently a xylosazone; (3) that I described a quantitative method of performing the reaction, giving accurate figures by which one urine may be compared with another, under the name of the "iodine coefficient," in 1913[4]; and (4) that Dr. Chalmers Watson drew attention to the relation of the "pancreatic" reaction to the carbohydrate content of the diet as far back as 1910, I believe, and that this question and the effects of treatment on the amount of dextrin in the urine were fully dealt with by me in a paper I read before the Medical Section of the Seventeenth International Congress held in London three years ago.[5]

A method of carrying out the test by comparing the reducing power of the urine before and after boiling with hydrochloric acid, similar to that employed by Dr. Van Hoogenhuyze and Dr. Nagasaki, was experimented with in my laboratory some four or five years ago but abandoned, chiefly owing to the difficulty then experienced in ascertaining the exact end-point of the reduction, in favour of the more accurate iodine coefficient. The latter is directly dependent upon the amount of dextrin the urine contains, and that alone; whereas the figures obtained by comparing the reducing power of the urine before and after hydrolysis include the glycuronic acid, sugar, &c. If one of the methods of estimating the reduction that gives a sharp end-point is employed and the results are interpreted in a qualitative rather than in a quantitative sense, they can be employed no doubt with advantage for rapid clinical work; but it must be remembered that, like the original "pancreatic" reaction, the findings must be considered in the light of the clinical symptoms and be confirmed, if possible, by analysis of the fæces.

I am, Sir, yours faithfully,
Nottingham-place, W., June 12th, 1916. P. J. CAMMIDGE.

THE FEES OF LOCUM TENENTS.

To the Editor of THE LANCET.

SIR,—May I through your columns contradict an impression which has unfortunately gained ground that it is almost impossible to get substitutes at reasonable fees. Since the war began many hundreds of vacancies have passed through my hands, and I am glad to say that, thanks to the loyal help of many men retired from practice and others ineligible for the army, the supply has so far been equal to the demand. The fees at present obtaining are £7 7*s.* a week for normal practices, less if hospitality is offered to a wife or others. Somewhat higher fees are paid in manufacturing north country and colliery districts. If principals would refuse to pay excessive fees the few men who are trying to take an unfair advantage of their country's difficulties would soon be brought to reason.—I am, Sir, yours faithfully,

PERCIVAL TURNER.
Adam-street, Adelphi, W.C., June 12th, 1916.

SHORTAGE OF DOCTORS FOR THE ARMY AND NAVY.

To the Editor of THE LANCET.

SIR,—In THE LANCET of Jan. 16th, 1915, I suggested that many of the school examining doctors could be relieved of that work by local practising doctors. The Board of Education is now reporting on this proposal. In THE LANCET of May 20th, 1916, I suggested that in order to relieve panel doctors their work should be carried on by local non-panel doctors. I have referred this proposal to the Insurance Commissioners. I wish further to suggest that the three Local Government Boards of the United Kingdom should relieve their public vaccinators and, if need be, the district medical officers of army age by appointing local (over age) practising doctors to carry out vaccination and district Poor-law treatment.

I am informed that there are some 1000 vaccinators in Scotland, 812 in Ireland, and 3000 in England and Wales. Out of these 4812 vaccinators about half would be of military age. This scheme would exist only for war time. I have heard it suggested that the 37,290 registered midwives in England should vaccinate, thus following the system of a number of European nations, but this proposal need not be entertained.—I am, Sir, yours faithfully,

Liverpool, June 11th, 1916. ROBERT R. RENTOUL.

[1] In a suspected case of diabetic coma, or of threatening coma, this point may, I think, become one of considerable importance.
[2] See the account of Legal's test given in Maly's Jahresber. d. Thierchemie, 1883, vol. xiii., p. 71. (From Legal's account in Nos. 3 and 4 of the Breslau ärztl. Z itschr. for the same year.)
[3] Observations on the Composition and Derivatives of Urinary Dextrin, THE LANCET, Sept. 26th, 1914 p. 791.
[4] Glycosuria and Allied Conditions. Edward Arnold, 1913, p. 275; The Iodine Coefficient of the Urine, Seventeenth Internat. Cong. of Med., Medical Section, p. 305. Ibid.

The War.

THE CASUALTY LIST.

THE following names of medical officers appear among the casualties announced since our last issue :—

Killed.

Captain W. S. Armstrong, R.A.M.C., was a student at St. George's Hospital, London, qualifying in 1903. He had held appointments in Newfoundland, and was for a time assistant medical registrar at St. George's Hospital.

Wounded.

Captain D. A. R. Haddon, R.A.M.C., attached to the Royal Scots (Lothian Regiment).

Lieutenant E. V. Sullivan, R.A.M.C., attached to the Royal Field Artillery.

Captain C. F. White, R.A.M.C., attached to the Royal Engineers.

Missing.

Captain F. S. Park, Canadian Army Medical Corps, attached to the Canadian Mounted Rifles.

Captain W. R. W. Haight, Canadian Army Medical Corps, attached to the Canadian Mounted Rifles.

Officially Reported Killed in Action in the Naval Battle of May 31st and now Officially Reported to have been saved by the Germans.

Surgeon-Probationer D. J. T. Oswald, R.N.V.R.
Surgeon-Probationer A. Joe, R.N.V.R.

DEATHS AMONG THE SONS OF MEDICAL MEN.

The following sons of medical men must be added to our list of those who have fallen during the war :—

Second Lieutenant F. J. Cathcart, Royal Field Artillery, only son of Mr. C. W. Cathcart, F.R.C.S. Edin.

Midshipman M. Austen, R.N., H.M.S. *Queen Mary*, only son of Fleet-Surgeon T. Austen, R.N.

Second Lieutenant R. de W. Harvey, Dorset Regiment, attached to the King's Royal Rifle Corps, only surviving son of Mr. H. Harvey, M.R.C.S., L.R.C.P., of Wyke Regis, Dorset.

OBITUARY OF THE WAR.

ARTHUR W. TANNER, M.D. TOR.,

LIEUTENANT-COLONEL, CANADIAN ARMY MEDICAL CORPS.

WE regret to announce the death of Lieutenant-Colonel A. W. Tanner, commanding the 10th Canadian Field Ambulance, from wounds received on June 3rd. Born at Watford, Ontario, in December, 1875, Dr. Tanner graduated at Toronto University in 1899, and settled in practice at Moosomin, Saskatchewan. There he rapidly made his mark as a general practitioner and most capable surgeon. In 1910 he joined the 16th Canadian Light Horse, allied with the 16th (the Queen's Lancers), and within a month of the beginning of the war he was given his Lieutenancy in this Brigade. From being a combatant officer, he transferred to the Canadian Army Medical Corps, and last year was appointed Assistant Director of Medical Services of the 10th Canadian Military District, which included the Provinces of Manitoba and Saskatchewan. As such he was in medical charge of the Sewell Camp in Manitoba, and later was largely instrumental in bringing together and establishing the 10th Field Ambulance. This unit arrived in England on March 13th of this year, and within a month was at work at the front. Here Colonel Tanner immediately impressed all with whom he came into contact as a most capable officer with administrative abilities of the first order. His death represents a very distinct loss to the Canadian Army Medical Service.

Surgeon-General G. Carleton Jones, D.M.S., Canadian Expeditionary Force, writes: "I have only known Colonel Tanner a short time since he joined the Expeditionary Force in England, but from what I saw of his work both here and in France I was particularly struck with his natural ability for military medical work. I feel his loss very much, as it means that the Service is deprived of a most capable and useful officer."

FRANCIS FREDERICK LOBB, M.R.C.S., L.R.C.P. LOND.,

FLEET-SURGEON, ROYAL NAVY.

Fleet-Surgeon F. F. Lobb, who lost his life on H.M.S. *Queen Mary* in the battle of May 31st, was 42 years of age. He received his medical education at St. Mary's Hospital, qualifying in 1898, after which he held house appointments at his own hospital as well as at the London Fever Hospital and the Female Lock Hospital. Joining the Royal Navy, he was on H.M.S. *Thrush* at the time of the Delagoa Bay blockade, and landed at Mossels and Lambert's Bay, receiving the South African medal. In the Gambia River expedition of 1901 he was on shore for ten days and organised a base hospital. Besides the medals for the services which we have noted, Fleet-Surgeon Lobb received the thanks of the Colonial Office for his report on Pitcairn Island in 1908, and the medical service of the navy has lost in him a valuable officer. Fleet-Surgeon Lobb was unmarried.



GEORGE MOORE JOHNSON, M.A., M.B., B.CH. OXON.,

SURGEON, ROYAL NAVY.

Surgeon G. M. Johnson, who met his death on H.M.S. *Defence* in the naval battle on May 31st, was 37 years of age, and the elder son of Mr. G. W. M. Johnson, of Childs' Bank, and of Mrs. Johnson, of Shortlands, Kent. He was educated at Charterhouse School and Magdalen College, Oxford, proceeding to the London Hospital, from which he took his M.B., B.Ch. in 1908. He then held the posts of house physician and later house surgeon at the Radcliffe Infirmary, Oxford. After gaining some experience in general practice, he went to Trinity, Newfoundland, in January, 1913, and practised there till after the outbreak of war, returning to England in January, 1915. He then held the posts of assistant tuberculosis officer and school medical officer for East Suffolk, till he applied for a post as surgeon in the navy, when he was appointed to H.M.S. *Defence* and served in her till he met his death. One of his colleagues writes of him: "Always fond of sport and good at all games, he was a good shot and a keen and successful fisherman and boatman; indeed, in the course of his professional duties in Newfoundland he often went out in such weather that the fishermen would be anxiously waiting his return. He had a very keen sense of his duty to his medical work, to which he applied abilities considerably above the average. His friends—and they were many—felt certain that he would have done good and distinguished service in his profession. Gifted with a superb body, he had a boundless store of energy and lived his life with a zest and keenness it was a pleasure to watch, but beyond all was his unusual capacity of forming real friendships socially and professionally, and his early death will make him sadly missed by a very wide circle." Surgeon Johnson leaves a widow, to whom we offer our sympathy.



JAMES MACCORMAC CALDWELL JOHNSTON, M.B., CH.B. ST. AND.,

LIEUTENANT, ROYAL ARMY MEDICAL CORPS.

Lieutenant J. M. C. Johnston, whose death in action was reported last week, was 32 years of age, and was the elder son of Dr. Robert Johnston, of Dundee. He received his early education at Dundee High School, where he excelled both in his studies and in the various branches of athletics. His medical training was begun at the University of Edinburgh and completed at the University of St. Andrews (University College, Dundee), where he graduated M.B., Ch.B. in 1913. He then acted as house physician to the Dundee Royal Infirmary and started in private practice in Perth. He was always keen on his professional work, in the performance of which he never spared himself. In the summer of 1915 he obtained a commission in the Royal Army Medical Corps, and left for France at the end of September attached to the 76th Field Ambulance. He met his death by shell-fire on May 27th while in the act of dressing a wounded soldier in the trenches. A medical friend writes of Lieutenant Johnston: "Endowed with good capacity and many high personal qualities, he gave great promise of success in his profession. He was very popular with his brother officers in France, and was held in esteem because he excelled in good work, and was most unremitting in ministering to the wounded under very trying conditions." He possessed, we are also told, in a rare degree the confidence and affection of the men under him.



JOHN SIDES DAVIES MACCORMAC, L.R.C.P. & S. EDIN.,

SURGEON, ROYAL NAVY.

Surgeon J. S. D. MacCormac, who was among the victims of the great naval battle of May 31st, was aged 44, the elder son of Mr. William MacCormac, of Banbridge, co. Down, Ireland, and a descendant of Dr. Henry MacCormac, of Belfast, a pioneer of the open-air treatment of phthisis. Educated at the Belfast Academical Institution, he first studied medicine under his cousin, Dr. William Aylmer Lewis, of Oswestry, later going to Edinburgh, where he qualified in 1894. He then acted for a time as dispensary doctor at Loughbrickland, co. Down. Later he started practice in Leicester, where he remained for some years, afterwards coming to London, where he was appointed an anæsthetist to the Royal Dental Hospital, Leicester-square. He became also a lecturer on ambulance work to the London County Council, as well as an ambulance examiner to the Metropolitan Police. He was an indefatigable worker, devoted much time to research, and was the author of several medical and surgical treatises, including "Prolonged Nitrous Oxide Anæsthesia in Dental Surgery." He also invented and improved a number of medical appliances and surgical instruments.



He had always had a leaning towards military matters, and was at the age of 17 a trooper in the Oswestry Squadron of the Shropshire Yeomanry; founded, and was captain of, the First Banbridge Troop of the Boys' Brigade, and held a commission as lieutenant in the Leicester Volunteers. When war broke out he at once offered his services to the Admiralty, was appointed surgeon to H.M.S. *Statesman* and sent to the Mediterranean, being transferred later to H.M.S. *Black Prince*.

Surgeon MacCormac was, it will be seen, a man of wide and varied interests. He was a member of the Orange Institution in Ireland, a Past-Master in Freemasonry, and a musician of no mean order, playing the harp, piano, guitar, and banjo. On the *Black Prince* for a time he conducted the ship's band. He was a straight rider to hounds, a good shot, and keen trout fisherman. He spoke French and Armenian, and wrote his diary in the latter language, as he said then no one could pry into the secrets of his patients. Those who knew him speak of him as being of a sunny, lovable nature, generous to a fault, and always full of hope, no matter how depressing the conditions. A wide circle of friends in London and elsewhere will regret his death. He leaves a widow, the daughter of the late General Sir Charles MacGregor, Quartermaster-General in India, and a little daughter aged seven.

AUXILIARY R.A.M.C. WIDOWS AND ORPHANS FUND.

To our brief report in last week's number of the meeting held at the Royal Army Medical College on June 1st to consider the desirability of establishing a benevolent fund for the Services auxiliary to the Royal Army Medical Corps, we can now add the text of the two resolutions which were unanimously carried:—

(1) That a fund in connexion with the officers of the auxiliary branches of the Royal Army Medical Corps be formed and that a committee be appointed representative of the three branches to formulate a scheme and to report to a further meeting.

(2) That the aforesaid committee be also requested to consider and report as to the possibility of establishing a General Relief Fund for the rank and file of the same forces.

The following officers were elected to form the provisional committee, with power to add to their number:—Colonel W. Culver James (T.F.), Colonel J. Atkins, C.M.G., Lieutenant-Colonel Sir John Collie, Lieutenant-Colonel H. H. Tooth, C.M.G. (T.F.), Major Ewen Maclean (T.F.), Major G. Newton Pitt (T.F.), Captain R. J. Stirling (S.R.I.), and Lieutenant-Colonel F. W. H. Davie Harris as secretary. The further meeting to consider the draft scheme has been fixed for Monday, June 26th, at 2.45 P.M., in the Royal Army Medical College theatre.

CENTRAL MEDICAL WAR COMMITTEE.

A meeting of the Central Medical War Committee was held on June 14th, when Colonel Blenkinsop, R.A.M.C., and Colonel Thom, R.A.M.C., attended, and a very succinct statement was made both as to the actual and immediate medical needs of the army, and as to the future probable demands for medical officers, in bulk and in weekly detachments, for the different zones of war. It was explained how far the need could be met, now and in the near future, by graduates from the Overseas Dominions, now approaching examinations, and by the acceptance of senior men for medical garrison duty, in addition to the men secured under the Enrolment Scheme of the Central Medical War Committee. It was definitely announced that the War Office had decided to give commissions in the Royal Army Medical Corps to medical men between 45 and 55 willing to take whole-time general service in the United Kingdom. This action on the part of the War Office will be welcomed by a large group of medical men who have hitherto been debarred from offering their services to the country, and who will thus set free medical officers in the Territorial Force who have received the military training necessary for foreign service.

The announcement was made to the Committee that the Central Medical War Committee, the Scottish Medical Service Emergency Committee, and the Reference Committee of the Royal Colleges had been definitely recognised by the Army Council.

The chairman of the Central Medical War Committee, Mr. T. Jenner Verrall, stated that the percentage of enrolled men was steadily becoming a very substantial one, the exact figures not

being given at the time, and the general impression received of a review of the work of the Committee, taken in connexion with Colonel Blenkinsop's categorical figures, was that although the Committee had much difficult work ahead, their task was one which could be accomplished.

Professor Henry Littlejohn placed his resignation in the hands of the Committee in the event of it being desired to add an English member on the Committee in his place, but the Committee felt that, quite apart from Professor Littlejohn's personal and great services to the Committee, it was desirable to have Professor Littlejohn on the Central Medical War Committee as a link between that body and the Scottish Medical Service Emergency Committee, of which body he was also a member. Professor Littlejohn was unanimously desired to withdraw his resignation.

MEDICAL PRACTITIONERS AND THE MILITARY SERVICE ACTS.

THE present position will be made clear to all our readers by the letter from Sir Alfred Keogh, Director-General of the Army Medical Service, which follows, and with which is included a very useful Memorandum on the whole subject from the War Office.

To Members of the Medical Profession.

I am extremely anxious to draw your attention to the particular provisions of the Military Service Acts, and of the Regulations now made thereunder, which concern the medical profession. For this purpose I have thought it may be convenient that a special Memorandum should be prepared on the subject, which should note the main points of practical importance to practitioners and the chief considerations, medical, military, and civil, that have been involved in the problem.

I enclose such a Memorandum with this letter, and I am convinced that it is of the highest importance that every practitioner should familiarise himself at once with the exact position, in regard to himself and to the profession generally, which has been brought about by the new conditions, as therein set out.

I desire to emphasise the fact, which will be clear to you, I think, on reading the terms of the Memorandum, that the scheme must of necessity depend for its successful working upon the support and coöperation of the whole profession. It is, I believe, impossible to exaggerate the importance of this effective coöperation; by this alone will it be possible to justify and maintain the very special arrangements now sanctioned by Parliament for the medical profession in relation to military service.

I need hardly remind my professional brethren that in the present circumstances of the nation the medical profession is under a very great responsibility for the welfare both of H.M. Forces and of the civil population. The profession has now been entrusted, in a very special manner, as is explained in the Memorandum, with the responsibility of working out, in coöperation with the Government, what I may perhaps call the mobilisation of the whole of the medical services of this country for its civil needs, on such lines as shall enable the pressing requirements of the Army to be met with the least possible injury to the civil population. A higher responsibility, a more inspiring opportunity, could hardly be imagined for any profession; and, as a member of the medical profession myself, I make no apology for being proud that this call has come to it.

I should like to state how deeply sensible I am of the spirit in which large numbers of medical men have rendered and are rendering essential service to the nation; and I wish to make it absolutely plain that the purpose of the scheme described in the Memorandum is to assist the profession in this great task which I am assured it is most anxious to fulfil—the task of securing the best possible disposal of the energies of the medical men throughout the country by the utilisation of the skill of each practitioner in the sphere in which he is found to be most needed at a given time.

I am convinced by my close and continuous observation of the problem that it is only by means of such a national organisation of medical services, effected by the profession itself, that the profession can be assured of serving the country with the maximum of efficiency and with the minimum of disturbance and friction in the case of individual practitioners.

Under the scheme shown in the Memorandum—given the keen coöperation of the whole profession—I earnestly hope it will prove possible to meet the urgent and ever-varying needs of the naval and military forces for medical officers, and at the same time to maintain, without risk of a breakdown, those medical services which are indispensable to the general civil population—services that are especially vital in time of war in those industrial areas where medical provision is, even in normal circumstances, no more than adequate for essential requirements. This great task can only be achieved, on the lines shown in the Memorandum, by the strenuous and continued efforts of all the members of the profession in all parts of the country.

There is one further point of very great moment which I must emphasise, and on which I must make a personal appeal to those of my professional brethren whom it directly concerns. While the smooth working of the scheme can, as already shown, only be effected by engaging the patriotic support of every practitioner, I am bound in a very special manner to beg the attention of men between 41 and 45 years of age, to the manner in which they, in particular, have it in their power to mar or to contribute to its success.

To every practitioner between these ages, I would say that, while not liable to the provisions of the Military Service Acts, it is open to him (I hope each one will consider whether it is not indeed incumbent on him) to offer himself, by enrolment, as one who may be selected, if needs be, for professional service with the Forces, at home and abroad. It is estimated, on a careful investigation of available figures, that the full acceptance, by the men of these ages, of this opportunity of rendering service to their country would secure an addition of some 40 per cent. to the number of practitioners now otherwise eligible for selection (if required) for commissions in the Royal Army Medical Corps.

Practitioners between 41 and 45 years of age are, in fact, in a position, by now enrolling, to assist in a peculiarly important degree the achievement of the objects of this scheme for the organisation of the profession, thus enabling the Government both to meet the pressing needs of the Forces at home and abroad, and to ensure the maintenance of an adequate medical service for the civil population.

I desire to commend the whole scheme to your careful consideration.—I am, yours very truly,

ALFRED KEOGH,
Director-General, Army Medical Service.

War Office, Whitehall, S.W., June 7th, 1916.

The National Organisation of the Medical Profession in Relation to the Needs of H.M. Forces and of the Civil Population and to the Military Service Acts.

In virtue of the compulsory provisions of the Military Service Acts, doctors up to the age of 41, whether married or single, are under the same statutory obligation as other citizens to serve in H.M. Forces for the duration of the war. The medical man, however, is in a very special position in the following respects: firstly, he is needed in the Navy and Army to render there the same kind of services that he fulfils in civil life; secondly, arrangements can be made in a large number of cases for carrying on his civil work, when he joins the forces, in a manner that will conserve to him or his family, in addition to his military pay, a substantial proportion of the remuneration he would have received had he remained in civil life; thirdly, this bringing about of an arrangement for carrying on his civil duties is often essential in the interests of the civil population and a necessary element in determining which of the men in a given place can most wisely be selected for the Army Medical Service; but, fourthly, the making of such arrangements must rest of necessity with the members of the medical profession.

For these reasons, two special arrangements have been provided under the Military Service Acts in regard to the medical profession: (i.) A special procedure as to questions of exemption of doctors from ordinary military service; and (ii.) a special procedure for selecting, and at the right time in each case, the particular men who can be spared from their civil work to serve as doctors with H.M. Forces with least injury to the civil population, and for retaining in their civil work those who are most needed there in the public interest.

Since both of these processes can be made properly efficient by means only of a *professional* body having full professional knowledge, Parliament has enacted in Section 7 of the new Military Service Act that the question whether a given doctor is to be taken to serve the Army or is to continue to do his work for the civil population, shall be decided by a Central Professional Committee instead of by the ordinary tribunals.

Now it is clear that before any Central Professional Committee can arrive at a wise decision in any given case, it must be in a position to make an accurate comparison of the situation (in different areas, and as between different doctors) as regards the existing supply of medical attendance, of the various types necessary for the civil population. This is especially important in regard to the poorer areas, where the provision in normal times is often barely sufficient for the minimal needs of the people; whereas in several places there can be found a considerable redundance of medical men, many of whom can quite well be spared before the local supply of doctors would be brought down to the level obtaining in normal areas. (The proportion of doctors to population is known to vary very widely, being as low as 1 to 5000 in some areas, and as high as 1 to 800 in others.) And in order to be able to make the necessary comparisons equitably, it is necessary in the first place that the whole supply of doctors of various types in all parts of the country shall have been carefully surveyed, not only on a basis of detailed local knowledge, but also on a comparative basis, from one central standpoint. It is further important that in the process of comparison and selection there shall be within the field of consideration the largest possible number of doctors, including particularly all those in the areas of redundancy as well as the others; for, though many thus included will be over the age for military-medical service, these can be brought into effective count by their taking practical part in arrangements for carrying on the civil practice of some of the men who can in that event, but not otherwise, be spared for the Royal Army Medical Corps.

This very important task of organised selection requires for its proper performance the existence of organisations for collecting detailed local information in all parts of the country, and of a central body in close connexion therewith, for appraising the information,

when collected, on a sound comparative basis, with a reasonably uniform standard, upon equitable professional principles, from a central standpoint, entirely free from personal bias or local prejudice. It is therefore obviously not a task that could have been undertaken at a moment's notice, nor properly achieved if only entered upon at this advanced period of the war.

There was, however, available to the Government an organisation of the kind required, both local and central, which has for some time past been in effective operation in England and Wales, and a similar one also in Scotland, having been set up by the medical profession itself, in the early months of the war, with the coöperation of the Medical Department of the War Office, for these purposes, long before there was any question of compulsory service.

This national organisation of the medical profession is now in three parts: (*a*) The Central Medical War Committee for England and Wales, a body composed of representative medical men of all types in the profession (*see* list below); (*b*) the Committee of Reference appointed (*see* list below) by the Royal College of Physicians of London and the Royal College of Surgeons of London, and consisting of Fellows of those Colleges, to consider cases of doctors on the staffs of hospitals and medical schools in the metropolis, and such other special cases in England or Wales as may be referred to it; and (*c*) the Scottish Medical Service Emergency Committee for doctors in Scotland, comprising representative men of all types in the profession in Scotland (*see* list below).[1]

The first and third of these bodies have local Professional Committees under them, each serving a particular geographical area, which represent and were appointed by the medical men in that area. This comprehensive and representative professional organisation has already been utilised by the War Office in many ways, and also by the Central Tribunal under the Military Service Act in the decision of particular doctors' cases; but its main function has been the selection from time to time of suitable medical men to be offered commissions in the R.A.M.C., and in particular the establishing and conducting, with the Army Council's approval, of a comprehensive Enrolment Scheme[2] for all qualified medical men up to 45 years of age—this being the limit for general service in the R.A.M.C.

This Enrolment Scheme is an officially approved arrangement whereby any duly qualified medical man under 45 years of age, who is willing, is able to enter his name on the Enrolment Register of these Professional Committees as prepared to accept a commission in the R.A.M.C., if and when offered one, undertaking thereby to accept service accordingly, at whatever time (if any) the Committee, after considering all relevant circumstances, shall consider that it is his turn to be selected by the War Office for that purpose. In recognition of the voluntary character of the service thus offered the Army Council have undertaken that a man thus offering himself should have always at least a month's notice before being taken, that he should not be called on to fulfil his obligation of commissioned service for more than 12 months consecutively, and that he should have a certain stated rate of remuneration during the present war.

Under this scheme a very large number of doctors have enrolled, and the Central Committees have compiled a register from the detailed information collected and sent up by their local Professional Committees, indicating the available men of various types in each area, with useful particulars of various kinds in regard to them.

The Government Departments having official relations with the medical profession, e.g., the Local Government Board, the Insurance Commissioners, and others, have worked in close coöperation with the scheme, and representatives of those Departments and of the War Office attend the meetings of the Committee.

This being the officially recognised organisation for coördinating the voluntary offers of medical service for the Naval and Military Forces, steps were taken by the War Office on the passing of the first Military Service Act, and the consequent introduction of compulsory military service for all unmarried doctors under 41 years of age, to secure that those who had thus volunteered should not be prejudiced thereby, and that the fullest use should be made of the scheme in all its possibilities.

With this object the Army Council arranged and announced publicly, firstly, that no doctor who had signified his willingness to accept a commission in the R.A.M.C. would be taken as an ordinary combatant; and, secondly, that *men who had enrolled* under the national organisation scheme of the profession above described *would not be called up* under the compulsory provisions of the Act, but would be left automatically by the Recruiting Authorities in the reserve until selected for a commission in the Royal Army Medical Corps. This was laid down in Army Council Instruction 485, which has been made widely known through the professional press.

Since that date this enrolment has continued, and the Professional Committees have largely extended the scope of their information; and when the introduction of the second Military Service Bill brought into view the application of compulsion for all medical men (as for other citizens), married as well as single, up to 41, thus vastly increasing the number of doctors that would be liable to compulsory service, it became evident that the Government must make still further use of the Professional Organisation, in order to cope with the task of solving equitably and with due regard to the needs of the civil population the many difficult questions involved in the selection of the doctors to be used for the medical service of the army, and the doctors to be left in civil practice respectively. A clause was accordingly inserted in the Bill, which is now section 7 in the Act as passed, authorising the recognition of Professional Committees in place of the Local and other Tribunals, for deciding the cases of all qualified medical practitioners, married or single, seeking exemption (on other than conscientious grounds) from compulsory service under the Acts.

The requisite Regulations under this section have now been made and issued, and the three Professional Committees named above are the committees to be recognised thereunder. It has thus become a matter of great importance to every medical man to know and to realise thoroughly the present position in respect of the profession, generally and individually, both in relation to the Acts and also to the whole question of obtaining a sufficient supply of medical men for our Naval and Military Forces, with as little injury as possible to the medical needs of the civil population.

It is with a view to facilitating the full comprehension of the various points involved in these questions that the present official Memorandum is issued; and it is hoped that the preceding historical and explanatory paragraphs may help in some measure to elucidate the present position as set out in the paragraphs here following.

The Present Position.

It will be found convenient for these purposes to consider the medical profession for the time being, in three categories: (A) Doctors under 41[3] who enrol; (B) doctors under 41 who do not enrol; and (C) doctors over 41.

A.—*Those under 41 who Enrol.*

(i) As explained earlier in this Memorandum, every doctor under 41, single or married, enrolled or not, is, in the same manner as other citizens, under the compulsory provisions of the new Acts; but, if he is enrolled, he will, by virtue of the arrangements given in Army Council Instruction 485 (above referred to), *not* be called up by the Military Authority; that is to say, the War Office refrains from applying to him its compulsory powers as to combatant service if and so long as he is enrolled and undertakes to serve, and (if required) serves, as a commissioned officer in the R.A.M.C whenever this may be found necessary in his particular case. *It is therefore important that every doctor, under 41, not yet enrolled, should at once enrol himself* by applying to the Central Professional Committee and signing the form which will be sent him immediately on application; this should be addressed, if he is in England or Wales, to the Central Medical War Committee, 429, Strand, W.C., and if he is in Scotland to the Scottish Medical Service Emergency Committee, c/o the Royal College of Physicians, Edinburgh.

To remove certain misconceptions believed to be prevalent, it may be well here to repeat that an *enrolled* doctor does not have to make any application to a Local Tribunal for exemption, for the reason that the summons to compulsory service, against which alone would he have any occasion to appeal to a Local Tribunal, does not reach him. He thus has no concern with any Local Tribunal, nor any Local Tribunal with him. For an enrolled doctor is not (where it is known to the Military Authority that he is enrolled) called up by the Military Authority; and if any enrolled doctor does in fact receive a notice paper from the Military Authority calling him up for service, all he need do is to send at once to that Military Authority a certified copy of the Certificate of Enrolment that he has previously received from the Central Committee in London or in Edinburgh; and the Military Authority will then, in accordance with A.C.I. 485, cancel the notice and the practitioner will remain in reserve unless and until selected for a commission in the R.A.M.C.

(ii) Being thus in the reserve, the doctor will remember that, as explained earlier, the decision as to whether and *when* he is to be selected for a commission in the R.A.M.C. and taken from his civil practice to serve as a doctor with the forces, has been delegated to the Central Professional Committees. Thus, every doctor enrolled under the scheme will remain in the Reserve unless and until he is notified that it is proposed to select him for receiving a commission in the R.A.M.C.

If and when he is thus selected, he will receive a notification of this fact officially from the Central Professional Committee, and on receiving this notification, if he is of opinion that his personal or professional circumstances, or any other considerations, would justify his claiming to be left in his civil practice till a later date, or even throughout the war, he must communicate, in writing, at once to the same Central Committee to that effect, when a form will be sent him on which to send full particulars of his case.

He will then receive from the Central Committee a statement of their procedure for considering his case, and of any further information which they may require from him; and in due course the Committee, after consulting the appropriate local committee,[4] and after hearing the doctor if he so desires, will make a final decision.

In cases where the doctor is on the staff of a hospital or medical school in the London County area, the Central Committee will hand on the doctor's application to the Committee of Reference described earlier in this Memorandum, and that Committee will consider and decide the case on such evidence as they think fit, with the same kind of procedure as above, and will communicate their decision to the Central Committee, who will transmit it to the individual and to the War Office.

If it is decided that the doctor is not then to be taken, or not to be taken till some specified later date, he will be informed accordingly by the Central Committee; and in any event he will be given at least a month's notice of the date of commencing service.

If, on the other hand, he is selected, he will be offered by the War Office, on the date indicated to him by the Central Committee, a commission in the R.A.M.C. which he will accept in accordance with the obligation that he entered into when he enrolled under the scheme. In that event his commissioned service will on that occasion be for a period not longer (unless he is willing) than 12 consecutive months, and the terms and conditions of service will be the same as those hitherto obtaining with R.A.M.C. commissions in the present war. (Information on this can be obtained at any time from the War Office.)

In this connexion a point arises on which it is important that doctors should clearly understand the position under the new Acts. Before these Acts the doctor was able at the end of the period of his commissioned service in the R.A.M.C. to return to civil life with no further obligations. But the Military Service Acts make an important difference; for now, on his return to civil life, compulsion applies to him, and if he does not at once enrol again, so as to obtain the conditional immunity from calling up that is then given him by Army Council Instruction 485, he will necessarily be called up for ordinary service by the military authorities, and will only be able to obtain exemption (if at all) from such service through the procedure described under B. below. He should, therefore,

[1] An analogous committee exists also in Ireland, but the present Memorandum deals only with Great Britain.

[2] In Scotland the term used is registration, but in this Memorandum the one word only is used throughout for convenience.

[3] The age limits in (A), (B), and (C) mean, in the case of a married doctor, that he is under or over 41 on June 24th, 1916, and of a single doctor, that he was under or over 41 on March 2nd, 1916.

[4] The Central Committee will not communicate to the local committee any information as to his personal affairs given them by the doctor which the latter has requested them to treat as confidential.

in order to avoid this, immediately enrol himself again, and thus put himself again, for the time being, outside the compulsory provisions of the Acts and come again into the position of being amongst those from whom the Central Professional Committee can select doctors for commissioned service in the R.A.M.C.; and he will be thus selected if and when the Committee thinks it is his turn to be taken again. How soon the Committee will determine it to be his turn (that is to say, how long the interval will be between the end of his first period and the beginning of his second) will be determined by the appropriate Central Professional Committee, who will take into account all the relevant considerations—e.g., the needs of the Army, the needs of the civil population, the number of doctors available, the number who have served for a period, the number who have not, and so forth. Doubtless, when the Committee is making its selections of doctors month by month for the R.A.M.C., men who have not previously served at all will, wherever on a general view of the circumstances it seems possible, be taken before a doctor who has served a period; and therefore doctors may hope that it will usually be found possible to arrange that the second period of commissioned service need not be directly consecutive on the first period, but that an interval will be possible; it being clear, however, as regards doctors under 41, that, in virtue of the compulsory provisions of the Acts, their statutory liability to military service holds good, as with other citizens, for the whole period of the war.

B.—*Those under 41 who do not Enrol.*

A doctor under 41 who is not enrolled does not have any of the advantages conferred by Army Council Instruction 485 explained above, so that an unmarried doctor (not enrolled) under 41 is liable at any time since March last to be called up by the recruiting officer for ordinary combatant service under the compulsory provisions of the Acts unless excepted by an exemption certificate; and a married doctor (not enrolled) under 41 is similarly liable after June 24th, 1916. If, on being thus called up, he desires exemption from ordinary service he must apply to the local tribunal for it; his claim will (unless it is on the ground of conscientious objection) invariably be sent on by the local tribunal, under Section 7 of the Act, to the Central Professional Committee in London or in Edinburgh, as the case may be. This Committee (or, where he is on the staff of a hospital or medical school in the London County area, the Committee of Reference to whom every such case is referred by the Central Committee) will determine whether it is, or is not, necessary that he should be allowed to remain in his civil practice, the procedure for investigation being on the same lines as above explained in respect of enrolled doctors.

If it is decided that he should so remain, whether for a time or indefinitely, the Committee will recommend exemption for such period and subject to such conditions as they deem suitable, and the local tribunal will give the doctor a certificate of exemption accordingly.

If, on the other hand, it is decided that it is *not* necessary that he should be retained, the Committee will so recommend, and the local tribunal will then, under Section 7 of the Act, refuse him exemption accordingly. The military authority will then call him up for ordinary service under the compulsory powers of the Military Service Acts, and the War Office will then (unless they think him unsuited for the R.A.M.C.) offer him a commission in the R.A.M.C.

Those who, on the Committee's recommendation, obtain temporary exemption will similarly be called up by the military authority at the expiration of the period fixed.

As every doctor coming under this heading B, whether refused exemption or exempted only temporarily, will have been brought in under the compulsory provisions of the Acts, and as (by not enrolling) he has not availed himself of the privileges offered under A.C.I. 485, his term of R.A.M.C. service will be for the whole period of the war, and on the ordinary rates of pay, *without any of the special arrangements as to pay or 12 months periods*, or otherwise, that have been accorded to doctors who *offer* themselves for service in the R.A.M.C. in this war.

C.—*Doctors over 41.*

Doctors are eligible *up to* 45 *years of age* for commissions in the R.A.M.C. for general service. But doctors over 41 are not within the compulsory provisions of the Act[5]; they can only be obtained for the R.A.M.C. by their consent. If they have already enrolled and thus given an undertaking to accept a commission in the R.A.M.C., they have pledged themselves to no more than 12 consecutive months of service; and this will also be the case as regards any doctors outside the limits of compulsion who now or hereafter enrol under the scheme. Many doctors over 41 may, on inquiry, be found willing to undertake an enhanced obligation—i.e., to serve a second period after such interval (if any) as the Central Professional Committee may think applicable in each particular case. But as men over 41 are under no statutory obligation to serve, the War Office has no intention of requiring this enhanced obligation to be undertaken by any of these men who volunteer to accept a commission in the R.A.M.C.; this matter will be left, in their case, wholly to the option of the individual, and the hitherto existing terms and conditions of commissioned service in the R.A.M.C. in this war will continue applicable to all doctors outside the limits of compulsion who offer themselves for these commissions.

The Army Council earnestly hope that all the doctors between 41 and 45 who have not yet enrolled will now enrol, and thus bring themselves into the list of possible candidates for commissions in the R.A.M.C. Doubtless, just as in the case of those under 41, many of them cannot be spared from their civilian medical work, or are so placed financially and otherwise that the Committee would decide that they ought not to be taken at all, or not until very late. Possibly a large proportion of them will not be required. But, on the other hand, the addition, by enrolment of all the doctors between 41 and 45 to the number of those under 41 remaining available now that so many of the much younger men have already joined the army, would mean an addition of nearly 40 per cent. to the field of selection, and thus obviously tend to diminish very greatly the difficulties arising both for their professional brethren under 41, for the needs of the civil population, and for the requirements of the Naval and Military Forces, in the pressing exigencies of the present war.

War Office, 7th June, 1916.

[5] i.e., single doctors over 41 on March 2nd, and married doctors over 41 on June 24th, 1916.

Central Medical War Committee.

Sir T. Clifford Allbutt, K.C.B., M.D., F.R.S., Regius professor of physic, University of Cambridge.
Sir James Barr, M.D., LL.D., consulting physician, Liverpool Royal Infirmary.
Lieutenant-Colonel R. A. Bolam, M.D., M.R.C.P., honorary physician, Royal Victoria Infirmary, Newcastle-upon-Tyne; professor of medical jurisprudence, University of Durham.
Charles Buttar, M.D., D.P.H., M.R.C.S., L.R.C.P. (chairman of Executive Subcommittee).
Major Russell Coombe, F.R.C.S., consulting surgeon, Devon and Exeter Hospital.
Major J. Galloway, M.D., F.R.C.P., F.R.C.S., senior physician, Charing Cross Hospital.
Sir Rickman Godlee, Bart., K.C.V.O., LL.D., M.B., M.S., F.R.C.S., consulting surgeon and Emeritus professor of surgery, University College Hospital; late President of the Royal College of Surgeons of England.
Major W. J. Greer, F.R.C.S.I., honorary surgeon, Royal Gwent Hospital, Newport, Mon.
N. Bishop Harman, M.B., F.R.C.S., senior ophthalmic surgeon, West London Hospital.
Thomas Hennessy, F.R.C.S.I., secretary of the Irish Joint Medical War Committee.
Professor Harvey Littlejohn, M.B., F.R.C.S., Dean of the Medical Faculty, Edinburgh University.
Major Albert Lucas, F.R.C.S., honorary surgeon, General Hospital, Birmingham.
J. A. MacDonald, M.D., LL.D., honorary physician, Taunton and Somerset Hospital, chairman of council, British Medical Association.
Sir Alexander Ogston, K.C.V.O., M.D., LL.D., consulting surgeon, Aberdeen Royal Infirmary; Emeritus Regius professor of surgery, University of Aberdeen; Surgeon in Ordinary to His Majesty the King in Scotland.
Sir William Osler, Bart., M.D., LL.D., F.R.C.P., F.R.S., Regius professor of medicine, University of Oxford.
Edwin Rayner, M.D., F.R.C.S., consulting surgeon, Stockport Infirmary.
B. A. Richmond, M.D., M.R.C.S., L.R.C.P., secretary of the London Panel Committee.
A. E. Shipley, F.R.S., Master of Christ's College, Cambridge.
T. W. Shore, M.D., L.R.C.P., M.R.C.S., Dean of the Medical School of St. Bartholomew's Hospital.
Frederick Taylor, M.D., F.R.C.P., consulting physician, Guy's Hospital; President of the Royal College of Physicians of London.
E. B. Turner, F.R.C.S., London, chairman of Representative Meeting, British Medical Association.
T. Jenner Verrall, LL.D., L.R.C.P., M.R.C.S., Direct Representative on General Medical Council (chairman of the Committee).
N. Bishop Harman, Alfred Cox, M.B. } Secretaries, 429, Strand, W.C.

It is proposed to enlarge the committee by the addition of two members having experience of provincial industrial practice.

Committee of Reference.

Representatives of Royal College of Surgeons, England:—
Surgeon-General Sir Watson Cheyne, Bart., K.C.M.G., C.B., President of the Royal College, for whom when absent Sir Rickman J. Godlee, Bart., K.C.V.O. (ex-President of the Royal College), is deputed to act.
Lieutenant-Colonel William F. Haslam, F.R.C.S.
Lieutenant-Colonel D'Arcy Power, F.R.C.S.
Charles Ryall, F.R.C.S.

Representatives of the Royal College of Physicians, London:—
Frederick Taylor, M.D., F.R.C.P., President of the Royal College (chairman).
Major Sidney Martin, M.D., F.R.C.P.
Lieutenant-Colonel W. Pasteur, M.D., F.R.C.P.
Captain H. G. Turney, M.D., F.R.C.P., F.R.C.S.
Secretary:—F. G. Hallett, Conjoint Board.

Scottish Medical Service Emergency Committee.

The President of the Royal College of Physicians of Edinburgh.
The President of the Royal College of Surgeons of Edinburgh.
The President of the Royal Faculty of Physicians and Surgeons of Glasgow.
The Dean of the Faculty of Medicine, University of St. Andrews.
The Dean of the Faculty of Medicine, University of Glasgow.
The Dean of the Faculty of Medicine, University of Aberdeen.
The Dean of the Faculty of Medicine, Edinburgh University.
Dr. John C. M'Vail, deputy chairman, National Health Insurance Commission (Scotland).
Dr. Robert Muir, professor of pathology, University of Glasgow.
Dr. T. K. Monro, Regius professor of the practice of medicine, University of Glasgow.
Dr. J. R. Hamilton, chairman, Scottish Committee, British Medical Association.
Dr. John Adams, vice-chairman, Scottish Committee, British Medical Association.
Dr. John Playfair, president of the Edinburgh Medical Guild.
Dr. John Gordon, president, Aberdeen Branch, British Medical Association.
Dr. John Stevens, secretary, Edinburgh Branch, British Medical Association.
Dr. J. R. Currie, senior medical officer, National Health Insurance Commission (Scotland).
J. A. Fleming, K.C., vice-dean of the Faculty of Advocates.
Dr. Norman Walker, M.D., F.R.C.P. Edin., convener.
T. H. Graham, secretary, Royal College of Physicians, Edinburgh

SCOTTISH MEDICAL SERVICE EMERGENCY COMMITTEE.

A meeting of the General Committee was held on Saturday, June 10th, in the hall of the Royal College of Physicians of Edinburgh, the following members attending: the President of the Royal College of Physicians, the President of the Royal College of Surgeons, the President of the Royal Faculty of Physicians and Surgeons of Glasgow, the Deans of the Faculties of Medicine of the Universities of St. Andrews, Glasgow, and Aberdeen, Dr. J. C. M'Vail, Professor Robert Muir, Professor T. K. Monro, Dr. John Adams, Dr. G. C. Anderson, Dr. John Gordon, Dr. John Playfair, Dr. John Stevens, Dr. Norman Walker (Convener), Mr. T. H. Graham (secretary); Sir Donald MacAlister, K.C.B., was also present. The Convener, in reviewing the position of medical men of military age under the Military Service Acts, gave an account of the negotiations with the authorities of the War Office resulting in the establishment of Central Professional Committees for Scotland and England respectively to deal with claims by or in respect of medical men for exemption. A statement was submitted showing that out of about 4000 qualified medical practitioners in Scotland 1617 had rendered service in one or other of the forces of the Crown since the outbreak of the war. In addition to this figure 95 applications for commissions had been recently transmitted to the War Office, making a grand total up to date of 1712. Dr. Norman Walker was elected chairman of the Central Professional Committee for Scotland, and it was decided that five should form a quorum. It was remitted to the Executive Committee to appoint or recognise such local Professional Committees as they might think necessary under the regulations. Sheriff James A. Fleming, K.C., Vice-Dean of the Faculty of Advocates, was appointed a member of the General Committee, and has agreed to act as legal assessor. This appointment is of significance and value, for Sheriff Fleming is a highly distinguished lawyer, and the public will feel that actions taken under his legal assessments will be properly inspired with knowledge and justice.

EDUCATIONAL BOOKS FOR BRITISH PRISONERS OF WAR.—Arrangements have been made, with the approval of the Foreign Office, for extending to British prisoners of war interned abroad the benefits of the scheme, which has been in operation for the last year in connexion with Ruhleben, for supplying selected books of an educational character to those of the interned who may be desirous of continuing their studies in any subject. Under this scheme several thousands of carefully selected volumes, mostly standard works, have been supplied to the Ruhleben Camp, which is now provided with excellent libraries (class, reference, and lending). These books, which have been sent out through the agency of officers of the Board of Education, have proved a great boon to the interned, and have enabled sustained educational work of a definite character to be carried on by the camp education department formed among the prisoners. In view of the value of the work the Board of Trade (Marine Department) have decided to take it into account, in connexion with their examinations for the certificates of competency granted by them to officers of the Mercantile Marine and the Fishing Service. Accordingly, arrangements have now been completed for recording the time spent by any prisoner interned at Ruhleben or Groningen in the study of nautical or other subjects. An appeal is therefore now made for a plentiful supply of new or second-hand books of an educational character (light literature and fiction is available from other sources) to meet the needs of the many thousands of British prisoners interned in enemy or neutral countries. It is to be hoped that to this appeal there may be a liberal response. A circular explanatory of the educational book scheme can be obtained by sending a postcard addressed at the Board of Education, Whitehall, S.W., to Mr. A. T. Davies, who is in charge of the arrangements.

THE WAR AND CHILD WELFARE.—Mrs. Leslie Mackenzie delivered a lecture recently in the Royal High School, Edinburgh, on the War and the Child Welfare Movement, in which she said that, as was shown by the infantile death-rate in Scotland, it was very necessary that the care shown to children under one year of age should be extended until they reached school age. From the reports of the school medical inspectors, who annually examined 400,000 Scottish children, it appears that the inspection and treatment of children before going to school are very inadequate. Voluntary institutions and agencies have done a great deal in the matter, but the problem of the pre-school child has far outrun the resources of voluntary effort, and Parliament has conferred on local authorities new powers to deal with the emergency under the Notification of Births Act and the Midwives (Scotland) Act. The new powers covered the whole period from before birth to the school age, said the lecturer, while the Local Government Board was preparing schemes of maternity service and infant welfare, and the grant-in-aid sanctioned by the Treasury amounted to 50 per cent. of approved outlays. It was expected that a fully developed scheme would enable the medical officer of health to provide each child with a certified health schedule for presentation on admission to school.

THE FEDERATED MALAY STATES HOSPITAL.—Thanks to the liberal financial support accorded by all classes of the community in the Federated Malay States, the committee of management of the Military Hospital established by these States at Blackmore End, Kimpton, Herts, has been able to increase the accommodation from 80 to 168 beds. Two new wards, each of 44 beds, have been erected in the grounds of the house kindly lent by the owner, Mrs. Vincent, the wards being similar in type to those of the Canadian Military Hospital at Orpington, Kent. The hospital is being equipped with an X ray installation, the cost of which is being borne by Messrs. Edward Boustead and Co., of Leadenhall-street, E.C., in conjunction with Messrs. Boustead, Hampshire, and Co., of the Federated Malay States. Captain G. D. Freer, R.A.M.C. (T.), formerly Principal Medical Officer, Selangor, is in charge of the hospital.

ERRATUM.—We referred last week to Sir Nestor Tirard as Commandant of the 3rd London General Hospital. Dr. H. E. B. Bruce-Porter is Commandant of the 3rd London General Hospital, whose staff is drawn from the schools of the University College Hospital, Middlesex Hospital, and St. Mary's Hospital, while Sir Nestor Tirard is Commandant of the 4th London General Hospital, the staff of which is drawn from the medical staffs of King's College Hospital, St. George's Hospital, Charing Cross Hospital, and Westminster Hospital.

Medical News.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—An ordinary meeting of the Council was held on June 8th, Sir William Watson Cheyne, the President, being in the chair. Mr. W. Sampson Handley was introduced, and the President handed to him a cheque for £100, the Walker prize for 1911–1915, together with a document declaratory of the award.—Mr. Robert Lawford Knaggs and Mr. Jonathan Hutchinson were re-elected members of the Court of Examiners.—A report was read from the Board of Examiners in Anatomy and Physiology for the Fellowship stating that at the recent examination 34 candidates were examined, of whom 11 were approved and 23 rejected.—A report was read from the Court of Examiners respecting the recent examination for the Final Fellowship; 14 candidates presented themselves, and of these 4 satisfied the examiners. It was resolved to issue diplomas of Fellowship to these and to one candidate who had passed at a previous examination and had since attained the age of 25 years.—It was resolved to issue diplomas of the Licence in Dental Surgery to 18 successful candidates.—The following examiners in anatomy and physiology for the Fellowship were then elected: Anatomy: W. H. Clayton Greene, R. W. Reid, Gordon Taylor, and W. Wright. Physiology: G. A. Buckmaster, J. Sydney Edkins, J. B. Leathes, and A. Rendle Short.—The following examiners under the Conjoint Examining Board in England were elected: Elementary Biology: G. P. Mudge and W. G. Ridewood. Anatomy: J. E. S. Frazer, A. M. Paterson, and A. Thomson. Physiology: C. M. H. Howell, H. E. Roaf, and G. A. Buckmaster as substitute for H. E. Roaf. Midwifery: H. R. Andrews, J. S. Fairbairn, C. H. Roberts, and G. D. Robinson. Public Health: Part I., J. W. H. Eyre; Part II., Sir Shirley Murphy. Tropical Medicine: J. W. H. Eyre and C. W. Daniels.—A letter was read from Sir Henry Morris reporting the proceedings of the General Medical Council at their

recent session. The best thanks of the Council were given to him for his services as the representative of the College on the General Medical Council.—The President reported that a meeting of the Fellows would be held on July 6th next for the election of four Fellows into the Council.

As the result of the recent Final Fellowship Examination, which was held from May 18th to 24th, diplomas of Fellow were conferred upon the following four successful candidates:—

Alfred Leslie Pearce Gould, Oxford University and University College Hospital; Temporary Surgeon Robert Sharp Lawson, R.N., Edinburgh University and St. Bartholomew's Hospital; Charles William Berry Littlejohn, Melbourne and Oxford Universities and St. Bartholomew's Hospital; and Francis Donaldson Saner, Cambridge University and Guy's Hospital.

The Diploma of Fellow was also conferred upon the following gentleman who had previously passed the requisite examination and has now attained the age of 25 years:—

George Sefton Miller, Guy's Hospital.

Licences to practise dentistry were conferred upon the following candidates:—

Alec Stuart Blacklaws and Cyril Montague Bullpitt, Guy's Hospital; Joseph John Charles Chiappa, Middlesex and National Dental Hospitals; Barrington Eady, Guy's Hospital; Richard John Spaull Ellis, Middlesex and Royal Dental Hospitals; Richard John Gustave Halden, Guy's Hospital; Austin George Hewer, Middlesex and National Dental Hospitals; Pierre Jean Hugo, Charles Henry Kidner, Frank Cecil Lean, and Oswald Octavius Lloyd, Guy's Hospital; Leslie Grantham Lunnon, Middlesex and Royal Dental Hospitals; Harold Pembroke Mabe, Charing Cross and Royal Dental Hospitals; Benjamin Micklethwait, Middlesex and National Dental Hospitals; and Michael Christian Vos Thom, Herbert Victor Vogt, Maurice Harold Wermig, and Samuel Adolf Woolf, Guy's Hospital.

THE King has appointed Mr. John B. Story, M.B., F.R.C.S.I., to be honorary surgeon-oculist to His Majesty in Ireland, in the place of the late Mr. C. E. FitzGerald, M.D.

Her Majesty the Queen has graciously consented to become patroness of the Incorporated Society of Trained Masseuses.

SOCIETY OF TROPICAL MEDICINE AND HYGIENE.—The annual general meeting of this society will be held at 11, Chandos-street, Cavendish-square, London, W., to-day, Friday, June 16th, at 5.30 P.M.

MEDICO-PSYCHOLOGICAL ASSOCIATION OF GREAT BRITAIN AND IRELAND.—The annual meeting will take place on Thursday, July 27th, at 11, Chandos-street, Cavendish-square, London. It will be mainly of a business nature and without the usual social accompaniments.

DONATIONS AND BEQUESTS.—Mr. and Mrs. W. H. Seager, of Cardiff, have given £2500 to the King Edward VII. Hospital, Cardiff, to defray the cost of the new operating theatre in memory of their son, who was killed at Neuve Chapelle.

HENRY SAXON SNELL PRIZE.—At the opening of the Conference on Sanitary Administration under War Conditions at the Royal Sanitary Institute on June 9th the Lord Mayor of London presented the Henry Saxon Snell prize of 50 guineas and the silver medal of the institute to Dr. William Hanna, assistant port medical officer of Liverpool, for an essay on Suggestions for the Improvement in the Sanitary Arrangements and Appliances Suitable on Board Ship. During the course of the proceedings it was announced that a prize of £50 and a silver medal were being offered by the institute for a thesis on Maternity and Child-Welfare Work.

THE ANNUAL ELECTION AT THE ROYAL COLLEGE OF SURGEONS IN IRELAND.—The annual election of the President, Vice-President, and Council of the Royal College of Surgeons in Ireland took place on June 9th. Mr. William Taylor, Vice-President of the College since 1914, was unopposed in his candidature for the Presidency. He has been a Fellow of the College since 1898, and has been a member of the Council for some years. He is surgeon to the Meath Hospital and Co. Dublin Infirmary. There were two candidates for the Vice-Presidency—Mr. John B. Story and Mr. R. Lane Joynt, of whom the former was elected. Mr. Story is a Fellow since 1880, and has been a member of Council for many years. He was previously a candidate for the Vice-Presidency in 1912. He is surgeon to the Royal Victoria Eye and Ear Hospital. Sir Charles A. Cameron was again elected honorary secretary to the College. The following were elected members of Council:—Mr. William Stoker, Sir Charles A. Cameron, Sir Lambert H. Ormsby, Mr. Richard D. Purefoy, Mr. Henry G. Sherlock, Sir Thomas Myles, Colonel D. Edgar Flinn, Sir Arthur Chance, Mr. Shepherd McC. Boyd, Sir Robert H. Woods, Mr. R. Bolton McCausland, Mr. Thomas E. Gordon, Mr. Edward H. Taylor, Mr. F. Conway Dwyer, Mr. Alexander J. McA. Blayney, Mr. R. Charles B. Maunsell, Mr. Trevor N. Smith, Mr. W. Ireland Wheeler, and Sir C. Arthur Ball. The only changes in the Council are that the places rendered vacant by the death of Sir Charles Ball and by the candidature of Mr. Lane Joynt for the vice-presidency are filled by the election of Colonel Flinn and Sir Arthur Ball. Mr. Edward H. Taylor, Regius professor of surgery in Dublin University, has announced his intention of being a candidate for the vice-presidency of the College in 1918.

THE death is announced from Swaziland of Surgeon-Major R. Clarke Perkins, D.S.O., who died on May 7th, of sudden heart failure. He gained his decoration for attending the wounded under fire during the siege of Wepener in the Boer War.

ROYAL MEDICAL BENEVOLENT FUND OF IRELAND.—The annual meeting of the Royal Medical Benevolent Fund Society of Ireland was held in the Royal College of Surgeons, Dublin, on June 7th, Mr. William Taylor, Vice-President of the College, presiding. The report stated that the total number of applications considered during the year was 93. Of these, 84 were from the widows of medical men, 3 from or on behalf of their orphans, and 6 from medical men themselves. The total sums disbursed in grants during the year amounted to £1232 13*s.* 6*d.* The subscriptions showed a decrease of a little over £200.—At the annual meeting of the Belfast and Co. Antrim branch held on May 30th in the Medical Institute, Belfast, £134 7*s.* 2*d.* was handed to the central treasurer in Dublin. This sum is a slight decrease as compared with the previous year, and lays stress on the fact that a large percentage of medical practitioners in Belfast and Co. Antrim do not support the society.

Surgeon-General John O'Nial, C.B., entered upon his ninetieth year on Wednesday, having been born on June 14th, 1827. He became a Licentiate of the Royal College of Surgeons, Ireland, in 1847, and joined the Army Medical Department as assistant surgeon in April, 1852, attaining the rank of surgeon in 1859, surgeon-major in 1872, and surgeon-general in 1885. He took part in the Kaffir War (1852) and the Umbeyla Expedition (1863), and was principal medical officer of the 1st Division Kandahar Field Force during the Afghan War in 1880 and of the Nile Expeditionary Force in 1884–85. His retirement took place in 1887.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

PATON, Major E. L., R.A.M.C., has been appointed by the Scottish Command Senior Medical Officer at Scone.

ROBERTSON, ROBERT, M.B., C.M. Edin., a Vice-President of the Royal National Hospital for Consumption, Ventnor.

WATT, A. BROWN, M.B., Ch.B. Glasg., House Surgeon at Perth V.A.D. Hospital.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

When the application of a Belgian medical man would be considered the advertisers are requested to communicate with the Editor.

BRADFORD, CITY OF.—Two Temporary Female Medical Officers. Salary 8 guineas per week.

BURY INFIRMARY.—Junior House Surgeon. Salary £150 per annum, with board, &c.

COUNTY OF LONDON.—Assistant Organisers of Children's Care Work under the London County Council. Salary £100 per annum.

DERBY, DERBYSHIRE ROYAL INFIRMARY.—House Surgeon. Salary £200 per annum, with board, &c.

DUBLIN UNIVERSITY, TRINITY COLLEGE SCHOOL OF PHYSIC.—Chair of Surgery.

DUDLEY, GUEST HOSPITAL.—Senior Resident Medical Officer. Salary £150 per annum, with board, &c.

GREAT YARMOUTH HOSPITAL.—House Surgeon, unmarried. Salary £200 per annum, with board, &c.

HORNSEY BOROUGH.—Assistant Medical Officer of Health for Maternity and Child Welfare Work. Salary £105 per annum.

HUDDERSFIELD ROYAL INFIRMARY.—Senior House Surgeon. Salary £150 per annum, with board, &c.

LEEDS CITY HOSPITALS FOR INFECTIOUS DISEASES AND TUBERCULOSIS.—Two Certified Assistant Medical Officers. Salary at rate of £250 per annum each, with board, &c.

LONDON TEMPERANCE HOSPITAL, Hampstead-road, N.W.—Assistant Resident Medical Officer for six months. Salary at rate of £120 per annum, with board, &c.

MANCHESTER BABIES HOSPITAL, Slade-lane, Levenshulme.—Superintendent.

MANCHESTER CHILDREN'S HOSPITAL, Pendlebury.—Locum Tenens Female Resident Medical Officer.

MANCHESTER NORTHERN HOSPITAL FOR WOMEN AND CHILDREN, Parkplace, Cheetham Hill-road.—Female House Surgeon. Salary £120 per annum, with board, &c.

NEW HOSPITAL FOR WOMEN, Euston-road, N.W.—Two Female House Surgeons and One Female House Physician for six months. Salaries £50 per annum, with board, &c.

PLYMOUTH, SOUTH DEVON AND EAST CORNWALL HOSPITAL.—House Physician. Salary £150 per annum, with board, &c.

QUEEN'S HOSPITAL FOR CHILDREN, Hackney-road, Bethnal Green, E.—House Surgeon and House Physician for six months. Salary £100 per annum each, with board, &c.

SHEFFIELD ROYAL INFIRMARY.—House Physician. Salary £120 per annum, with board, &c.

SOUTH LONDON HOSPITAL FOR WOMEN.—Female Pathologist. Salary at rate of £250 per annum.

SUNDERLAND ROYAL INFIRMARY.—Female House Surgeon. Salary £150 per annum, with board, &c.

WEST RIDING OF YORKSHIRE, MIDDLETON-IN-WHARFEDALE SANATORIUM, near Ilkley.—Female Assistant Medical Officer. Salary £300 per annum.

WIGAN, ROYAL ALBERT EDWARD INFIRMARY AND DISPENSARY.—Senior House Surgeon. Salary £250 per annum, with board, &c.

Births, Marriages, and Deaths.

BIRTHS.

ALLAN.—On June 8th, at 119, Radford-road, Leamington Spa, the wife of John Allan, M.D. Edin., D.P.H., of a daughter.

BRADLEY.—On June 11th, at Halstead, Essex, the wife of G. F. Bradley, M.B., B.S. Lond., M.R.C.S., L.R.C.P., of a daughter.

DICK.—On June 11th, at Tadworth, Surrey, the wife of F. A. Dick, M.B., Lieutenant, R.A.M.C.(T.), of a daughter.

HEDDY.—On June 8th, at St. Margaret's, Pyrford, Surrey, the wife of Captain W. R. H. Heddy, R.A.M.C. (T.)., of a son.

HIGHET.—On June 8th, at Glasnevin, Barnes' Close, Winchester, the wife of Temporary Captain H. C. Highet, R.A.M.C., of a daughter.

POWELL.—On June 12th, at Harrogate, the wife of Major Jack Powell, R.A.M.C., Cairo, of a son.

WRAITH.—On June 11th, at Gwynant, Hampton Park, Hereford, the wife of Oswald S. Wraith, M.D., F.R.C.S.E. (late temporary Lieutenant, R.A.M.C.), of a son.

MARRIAGES.

CAMPBELL—WILLIAMS.—On June 7th, at Caerleon, Monmouthshire, Major Hamilton Campbell, R.A.M.C., D.S.O., to Mary, eldest daughter of Alfred Williams and Mrs. Alfred Williams, of The Mount, Caerleon, Monmouthshire.

CORKE—PETERS.—On June 8th, at Dibden Parish Church, Henry Charles Corke, L.D.S. Eng., to Sophia Augusta, only child of Mr. C. J. Peters, late of the Indian Public Works Department, of Chilgrove, Hythe.

HUXTABLE—HARE.—On June 7th, at the Parish Church, Heathfield, Sussex, Arthur Edward Huxtable, M.R.C.S., L.R.C.P., Captain, R.A.M.C., to Vera Kathleen, only daughter of Mr. and Mrs. Harcourt Hare, of Heathfield, Sussex.

KILNER—SIMPSON.—On June 10th, at St. Leonard's Church, Horringer, Lieutenant Henry Goff Kilner, R.A.M.C., to Mabel Olive, only daughter of Mr. and Mrs. R. T. Simpson, of Horsecroft, Bury St. Edmunds.

DEATHS.

ARMSTRONG.—On May 31st, killed in action, Walter Seymour Armstrong, Captain, R.A.M.C.

CAPPS.—On May 31st, Frederick Albert Capps, D.P.H., Fleet-Surgeon, R.N., son of the late Fleet-Engineer W. F. Capps, R.N., and beloved husband of Helena Capps.

PALMER.—On June 4th, suddenly, at Mundesley-on-Sea, Arthur E. Palmer, M.R.C.S., L.R.C.P., of Loughborough, Leicestershire.

WADD.—On June 12th, at "Burvale," Richmond, Surrey, Frederick John Wadd, M.B., M.R.C.S., aged 71 years.

N.B.—A fee of 5s. is charged for the Insertion of Notices of Births, Marriages, and Deaths.

BOOKS, ETC., RECEIVED.

ALLEN, GEORGE, AND UNWIN, London.
Newsholme's School Hygiene. The Laws of Health in Relation to School Life. By James Kerr, M.A., M.D. Fourteenth edition, revised and re-written. Price 4s. 6d. net.

BELL, G., AND SONS, London.
Downward Paths: An Inquiry into the Causes which Contribute to the Making of the Prostitute. With a Foreword by A. Maude Royden. Price 2s. 6d. net.

HEFFER AND SONS, Cambridge.
Tuberculosis and the Working Man. An Appeal to Friendly Societies. By P. C. Varrier-Jones, M.A. Cantab., M.R.C.S., L.R.C.P. Lond. With a preface by G. Sims Woodhead, M.A., M.D., LL.D. Price 6d. net.

ST. CATHERINE PRESS, Stamford-street, S.E.
Campaign for Clean Milk. A series of articles reprinted from the *Observer*. Price 1s. net.

SHAW AND SONS, London.
Clinical Disorders of the Heart Beat. By Thomas Lewis, M.D., D.Sc., F.R.C.P.

SNOW AND FARNHAM COMPANY, Rhode Island.
The Intestinal Putrefaction. By Charles Fenner Peckham, M.D.

Notes, Short Comments, and Answers to Correspondents.

GILBERT AND ELLICE ISLANDS: UNSATISFACTORY HEALTH REPORT.

THE report on the affairs of the Gilbert and Ellice groups of Islands (Western Pacific) for 1914–15 indicates an unfortunate retrogression in matters of health as a result, in part at all events, of the war. The statistics of births and deaths compare unfavourably with those of 1913–14 and Mr. E. C. Eliot, the Resident Commissioner, observes: "With the outbreak of war and the instant disruption of the shipping service, communication between the islands, never good, became almost a thing of the past. At the same time, the extraordinary expansion of the Central Hospital at Tarawa, with its immediate calls on the time of the single European doctor in the Gilbert Group and of the native medical practitioner assisting him, rendered it impossible to take advantage even of the exiguous remaining opportunities of visiting outlying islands, for chances of return were problematical. Shortness of staff under war conditions may be said to have converted into a very hindrance, therefore, the achievement of that centralisation which, at the cost of so much labour, had begun to assume shape as the nucleus of an efficient system. Densely populated islands were isolated. The natives forgot, and the local 'dressers' were unable to enforce, the simple rules of hygiene and common-sense which only the moral spur of a white medical officer's presence can keep before them. The Gilbert islander, so trustworthy in matters of government, has elementary notions about the care of his person. Without the possibility of effective supervision, the natives reverted into the most vicious habit of primitive races—that of concealing sickness. Tuberculosis, which runs so speedy a course in the system of such peoples, has done its work. Syphilis—spelling sterility, miscarriage, stillbirth, and a high infantile mortality—is ever active, while the utter unenlightenment of the natives in matters of health is a constant sap at all efforts to aid them. Without the means of communication between islands the work of the medical officer is at every turn frustrated. It is at such times that the need of a Government vessel is felt." It is added that there is no malaria, but that the stegomyia mosquito abounds in the two groups. Dengue fever sometimes follows the visits of ships. Dysentery is endemic, but of comparatively rare occurrence among European residents. During the year there was an outbreak of typhoid fever on Ocean Island, resulting in the deaths of several Japanese and two Europeans. Immediate measures were taken to ensure the safety of the water-supply, with good effect. The climate is remarkably equable, being tempered by the vast waters in which the islands lie, and by the continuous westerly breezes which prevail. The temperature is subject to but few variations, ranging between 78° and 80° F. as a general rule, and on rare occasions falling as low as 68° or rising as high as 95°. Sunstroke is unknown. On Ocean Island Europeans may be seen working or playing bareheaded in the hottest part of the day. The climate is said to be beneficial to Europeans suffering from asthma or pulmonary trouble. The rainfall for the year ranged, according to islands, from 120 to 140 inches. There are 26 Island Hospitals under the charge of native "dressers" who have gained their experience in the Central Hospital and Medical Training School at Tarawa. All cases of a grave nature are sent to that hospital, whilst cases capable of easy treatment are admitted into the island hospitals. The construction of a leper asylum upon an isolated islet has been decided upon.

HÆMOPHILIACS AND MILITARY SERVICE.

To the Editor of THE LANCET.

SIR,—Are hæmophiliacs fit for army service? A very pronounced case known to me has just been passed. Commonsense seems to indicate that where a medical certificate mentioning a serious disease is handed in further investigation should be made. This was not done in three other cases, and they have all been discharged from the army since.

I am, Sir, yours faithfully,

Liverpool, June 12th, 1916. ROBT. TURNER, M.D. Aberd.

*** Hæmophiliacs are not proper material for soldiers.—ED. L.

D.P.H.—The age has not been considered prohibitive for special appointments, but no ordinary commissions are given to such senior applicants.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY, Burlington House, London, W.

THURSDAY.—4.30 P.M., Croonian Lecture: Prof. S. J. Hicksyn: Evolution and Symmetry in the Order of the Sea-pens.

LONDON DERMATOLOGICAL SOCIETY, St. John's Hospital, 49, Leicester-square, W.C.

TUESDAY.—4.30 P.M., Annual Meeting. Election of Officers. 5 P.M., Cases sent for Consultation. Demonstration of Pathological Specimens. Exhibition of Clinical Cases by Dr. J. L. Bunch, Dr. M. Dockrell, Captain W. Griffith, Dr. W. K. Sibley, Captain C. H. Mills, and Dr. E. G. Reeve.

ROYAL METEOROLOGICAL SOCIETY, 70, Victoria-street, Westminster, S.W.

WEDNESDAY.—4.30 P.M., Paper:—Lieutenant E. H. Chapman, R.E.: The Relation between Atmospheric Pressure and Rainfall at a Single Station.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY, West London Hospital, Hammersmith-road, W.

FRIDAY.—8.15 P.M., Cavendish Lecture:—Sir John Bland-Sutton: The Fate of Patients who have had Stones Removed from the Kidney.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, road, W.

MONDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye. Dr. Simson: Diseases of Women.

TUESDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations. Dr. Simson: Diseases of Women.

THURSDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye.

FRIDAY.—10 A.M., Dr. Simson: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Eye Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY.—Clinics:—10.30 A.M., Surgical Out-patients (Mr. H. Gillespie). 2.30 P.M., Medical Out-patients (Dr. T. R. Whipham): Gynæcological Out-patients (Dr. Banister). 3 P.M., Medical In-patients (Dr. R. M. Leslie).

TUESDAY.—2.30 P.M., Surgical Operations (Mr. Carson). Clinics:—Medical Out-patients (Dr. A. G. Auld); Surgical Out-patients (Mr. Howell Evans); Nose, Throat, and Ear Out-patients (Mr. C. H. Hayton). Radiography (Dr. Metcalfe). 3.30 P.M., Medical In-patients (Dr. A. J. Whiting). 4.30 P.M., Special Demonstration: Mr. C. H. Hayton; Selected Throat Cases.

WEDNESDAY.—Clinics:—2.30 P.M., Throat Operations (Mr. C. H. Hayton). Children Out-patients (Dr. T. R. Whipham); Eye Out-patients (Mr. R. P. Brooks); Skin Out-patients (Dr. H. W. Barber). 5.30 P.M., Eye Operations (Mr. R. P. Brooks).

THURSDAY.—2.30 P.M., Gynæcological Operations (Dr. A. B. Giles). Clinics:—Medical Out-patients (Dr. A. J. Whiting); Surgical Out-patients (Mr. Carson); Radiography (Dr. Metcalfe). 3 P.M., Medical In-patients (Dr. R. M. Leslie).

FRIDAY.—2.30 P.M., Surgical Operations (Mr. Howell Evans). Clinics:—Medical Out-patients (Dr. A. G. Auld); Surgical Out-patients (Mr. H. Gillespie); Eye Out-patients (Mr. R. P. Brooks).

THE THROAT HOSPITAL, Golden-square, W.

MONDAY.—5.15 P.M., Special Demonstration of Selected Cases.
THURSDAY.—5.15 P.M., Clinical Lecture.

ROBERT BARNES HALL, 1, Wimpole-street, W. (by permission of the Royal Society of Medicine).

WEDNESDAY.—8 P.M., Mrs. Mary Scharlieb, M.D.: Inherited Disease in Children (illustrated by the epidiascope). (Lecture I.)

CHADWICK PUBLIC LECTURES, Town Hall, Ilford, E.

Course of Three Lectures on the Prevention of Disease and Frostbite in the Army.

FRIDAY.—8 P.M., Lecture III.:—Professor S. Delépine: The Place of the Laboratory in the Prevention of Disease (illustrated by diagrams and lantern slides).

The following magazines, journals, &c., have been received:—Archives of Radiology and Electrotherapy, Medical Review, Annales de l'Institut Pasteur, Edinburgh Medical Journal, Journal of Laryngology, Rhinology and Otology, Dublin Journal of Medical Science, Surgery, Gynecology, and Obstetrics, Public Health, La Clinique Ophtalmologique, Annali d'Igiene, Indian Medical Gazette, American Journal of Roentgenology, Military Surgeon, Journal of the Royal Army Medical Corps, Maryland Medical Journal, American Journal of Medical Sciences, Medical Review of Reviews.

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MANAGER'S NOTICES.

THE INDEX AND TITLE-PAGE TO THE LANCET.
January to June, 1916.

IN view of the Government restrictions upon the supply of paper, and the shortage of paper quite apart from these restrictions, we cannot include, as usual, in all the copies of THE LANCET the Index and the Title-page which are due at the end of this month. The Index and Title-page will, of course, be prepared, and copies will be supplied gratis to subscribers who intimate their wish to receive them to the Manager, THE LANCET Office, 423, Strand, London, W.C. Such application should please be sent in at once.

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(Taken daily at 8.30 a.m. by Stewart's Instruments:)

THE LANCET Office, June 14th, 1916.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
June 8	29·726	W.	...	119	63	44	48	52	Cloudy
,, 9	29·780	W.	0·03	120	65	49	49	52	Cloudy
,, 10	30·060	N.W.	0·20	118	61	50	51	54	Cloudy
,, 11	30·130	W.	0·21	107	63	46	44	47	Cloudy
,, 12	30·000	N.	0·13	84	50	46	46	47	Raining
,, 13	29·770	N.	0·10	97	55	47	49	50	Cloudy
,, 14	30·020	N.E.	...	69	53	47	48	49	Cloudy

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An Address
ON
INJURIES OF THE EYE AND ORBIT.

Delivered at the University of Malta before the Conference of Medical Officers, Malta Command,

BY ARTHUR D. GRIFFITH, M.B.,
B.S. LOND., F.R.C.S. ENG.,

CAPTAIN, R.A.M.C. (T.F.); OFFICER IN CHARGE, MILITARY HOSPITAL, HAMRUN, MALTA; SPECIALIST IN OPHTHALMOLOGY, MALTA COMMAND; SURGEON, ROYAL EYE HOSPITAL, LONDON.

GENTLEMEN,—I feel that I owe you an apology for inviting your attention to a specialty. My justification must be that ophthalmology is the specialty which, more than others, presents grave problems in war—problems on the correct solution of which depend the future happiness and usefulness of the patient. Injuries of the eye and orbit form a comparatively small proportion of the cases with which the oculist has to deal. Analysing 350 consecutive cases from active service from my notebooks, I find that 25 per cent. are cases of injury and 15 per cent. are cases of a condition which is a rarity in peace practice, and which may be called "shock amblyopia." I shall refer to this condition in detail later. Of the remainder, the majority (40 per cent.) are cases of error of refraction, including squint, and the remaining 20 per cent. includes such diverse conditions as conjunctivitis, pterygium, conical cornea, old injuries, retinitis pigmentosa, tobacco amblyopia, nuclear ophthalmoplegia, injuries to the visual cerebral cortex, and many others.

The cases of eye injury fall easily into two classes—those in which little damage has been done and useful vision will be retained, and those in which the eye is at once utterly spoiled, with a very small intermediate class. A more useful classification, however, is the anatomical.

CORNEA.

Cases in which the cornea alone is injured are those of foreign body in the cornea and traumatic ulcers. As to ulcer I shall say nothing beyond protesting against the use of cocaine in this condition. It at once relieves pain, but softens the corneal epithelium and renders it more susceptible to the attacks of micro-organisms. Thus the use of this drug in cases where the forces of destruction and of repair are evenly balanced may decide that the former shall prevail and seal the fate of the eye.

Foreign bodies in the cornea may be superficial, as are the majority, lying in the corneal epithelium or penetrating the substantia propria for a short distance, or may be buried in the substantia propria, or may be so deep as to project into the anterior chamber. When superficial they are readily picked out with the point of a cataract needle, or, if that be not available, a sewing needle, or even the point of a penknife will do quite well. The object is to remove the foreign body and not to remove corneal tissue, and when a small particle is neatly removed it should be impossible to see the wound. For removing a foreign body buried in the substantia propria of the cornea two methods are available. One method is to dig away corneal tissue until the particle is exposed. This is easy but clumsy, and leaves a crater which must be filled, in part at any rate, by scar tissue which is opaque. The better method is to cut a flap of corneal tissue just so thick that when it is lifted up the particle is exposed and can be picked out with the needle point. The flap then falls back in place and the resulting scar is minimal.

With very deep foreign bodies there is the risk that the most gentle manipulations may force the particle into the anterior chamber, where it will be a grave menace to the eye, and whence it will be very difficult to remove. The removal of these foreign bodies may be one of the most difficult operations in ophthalmic surgery, and should only be undertaken under the best conditions. As illustrations of the methods which may be employed I will quote two cases.

1. Private, aged 19. On Sept. 1st, 1915, near S——, a bomb burst in his trench and he sustained many superficial wounds. There was a small foreign body nearly at the mid-point of the right cornea. It was very deep, resting on Descemet's membrane, but not projecting into the anterior chamber. Under cocaine anæsthesia a bent broad needle was passed into the anterior chamber, and its point was made to support the foreign body from behind while a cataract needle, working from the front of the cornea, removed it.

2. Private, aged 22. On Sept. 18th, 1915, at A——, a bullet struck the sandbag parapet and sand was flung into his left eye. A transparent foreign body (flint) the size of a pin's head projected into the anterior chamber. Under cocaine anæsthesia the anterior chamber was opened by a bent broad needle at the corneo-scleral junction, and a small sharp spoon was passed in behind the foreign body. Counter-pressure was applied to the front of the cornea by means of a curette, and the foreign body was removed in the spoon.

IRIS.

The two affections of the iris which concern us are iridodialysis and wound at the periphery of the anterior chamber with prolapse of the iris. Iridodialysis, or rupture of the base of the iris, results from a blow on the eye or from the passage of a foreign body through the iris. Iridodialysis is recognised, even when the basal rupture is small, by the flattening of the corresponding portion of the pupillary margin. In the cases of non-penetrating injury the condition is chiefly important by reason of the hæmorrhage into the vitreous which usually accompanies it. Vitreous hæmorrhage, as seen in cases from active service, is too extensive to hope for the degree of recovery expected in civil practice, and the patients cannot, before reaching a base hospital, have the complete quiet that is desirable. The end of these eyes is that when the hæmorrhage absorbs it leaves a more or less coarse web of opacity in the vitreous which greatly impairs vision. Wounds at the periphery of the anterior chamber, with prolapse of iris, require early and thorough attention. The prolapsed iris should be seized, drawn out, and sheared off. It is essential that the iris be cleanly cut, and that so much be drawn out that the edges retract clear of the wound in the cornea. Unless these points be observed the cut edges will adhere to the scar and the eye will remain irritable for a long time, and so long as it is irritable the eye cannot be regarded as safe. A second operation to free the adhesion will be difficult and probably unsatisfactory.

LENS.

Traumatic cataract is practically always due to the passage of a foreign body through, or its retention in, the lens. Careful examination will reveal a scar in the cornea, often very minute. The question arises, Is the foreign body in the lens, or has it passed through? If it is retained in the lens there is a possibility that by extracting the lens one may remove the foreign body and save a useful eye. Two examinations may assist to determine this point—examination of the field of light and localisation of the foreign body by means of X rays. The first examination is carried out by projecting a pencil of light, by means of a mirror, into the eye from various directions, the sound eye being covered. The patient is directed not to move his eye and to point to the light. If he can indicate promptly and accurately the direction from which the light is coming, and if his vision is at least equal to "shadows," it is probable that the mischief extends no further back than the lens. Localisation by means of X rays I shall refer to later. One of the first patients received in Malta from the Gallipoli Peninsula was a case of lens injury.

Private, 1 5th Royal Scots. Was in the original landing at Cape H—— on April 25th, 1915, when something struck his left eye. He did not know what struck him as he was unconscious for about three hours. Since then this eye had been defective. I saw him on May 6th and found a scar at the corneo-scleral junction above. The corresponding segment of the iris was wanting, the lens was absent, and the pupil was occupied by opaque capsule in which was a good central opening. The picture was precisely that of an eye on which a satisfactory cataract extraction had been performed. There was no other abnormality. I was too busy then to estimate his error of refraction, but with my 13 ophthalmoscope he read the second hand of a watch, and I have no doubt that with a suitable lens his vision would have been perfect. It was evident that the blow had caused the rupture of the cornea and of the lens capsule, and driven the lens out of the eye.

FUNDUS.

Injuries of the retina, choroid, and optic nerve I will only briefly mention. The series include 8 cases of detachment of the retina. This is produced by a comparatively light blow on the eye, or by concussion of the eye from the passage of a bullet in its neighbourhood. These cases all

occurred in the first two months of the campaign. I am not hopeful of any benefit resulting from treatment in these cases. Similar injuries may produce hæmorrhage into the retina. Concussion of the eye is also liable to produce a pigmentary degeneration of the retina which especially affects the central, macular, region, and I have seen one case of the curious condition described as "hole in the macula." Rupture of the choroid is caused by similar injuries, and all these conditions may be found in the same eye.

Atrophy of the optic nerve may be produced in several ways. The commonest method is for a blow in the neighbourhood of the orbit to produce a fracture which runs into the optic foramen. This may cause either rupture of the nerve, in which case blindness is instant, or its slow destruction by contraction of scar tissue or pressure of callus. In this type the only signs are the dilated pupil, inactive to direct light stimulus, and the atrophy of the disc. Secondly, a bullet traversing the orbit may divide the nerve. Thirdly, a bullet entering the orbit may so dislocate the eye as to rupture the nerve. In the last two cases the atrophy of the nerve will usually be associated with hæmorrhages in the neighbourhood of the nerve-head and other fundus lesions.

BLINDNESS.

The series includes 6 cases of blindness. (I regard as "blind" any case in which the vision is reduced to perception of hand movements or less.)

1. An officer at St. A—— Hospital. Both eyes were ruptured by a bullet passing transversely.
2. An officer at B—— S—— Hospital. The right eye had been excised on a hospital ship for rupture; the left eye had almost total detachment of retina. I was anxious that he should be given the slender chance of regaining some vision by being kept flat for several weeks, rather than undergo the disturbance of transport and possible sea-sickness, but he was very anxious to get home and was sent to England.
3. At R.N. Hospital, B——. The left eye had been excised for rupture; the right eye showed simple optic nerve atrophy probably due to a fracture into the optic foramen.
4. Private, at St. A—— Hospital. He had been struck on the left side of the face by fragments of a hand grenade. Both retinæ were detached.
5. Private, at H—— Hospital. A bullet had traversed the back of both orbits, and both eyes were proptosed, blind, and disorganised.
6. Private, at B—— Hospital. A similar condition, both orbits having been traversed by a bullet.

SHOCK AMBLYOPIA.

Shock amblyopia, or shock amaurosis, is the name which may be applied to diminution or loss of vision following a shock in which no structural change is produced in the eye or optic nerve. The shock is usually from the explosion of a shell or grenade near the patient, and at first I called the condition "shell amblyopia," but it may be due to other causes; one case followed a kick on the head by a mule. A typical history is that the patient was in a fire trench and a shell burst a few yards away; thereafter the sight in one or both eyes was blurred. The patient is usually knocked down by the explosion, but is often not unconscious. One can distinguish four conditions.

1. Transient blindness from over-stimulation of the retinæ. In this condition the patient sees a flash of light from the shell-burst, and afterwards sees only a grey or purple haze. This is an exaggeration of the normal exhaustion of the retina from exposure to light. It is usually recovered from completely, but one sometimes finds fine degenerative changes at the macula, such as one is familiar with in "electric ophthalmia" and "eclipse amblyopia."

2. Blindness from closure of the lids. In this condition the over-stimulated retinæ are hyperæsthetic, and the patient endeavours to protect them from light by a vigorous blepharospasm. If the lids are forcibly opened the vision is found to be little affected. The photophobia may be recovered from in a few days or may persist for months.

3. True amblyopia. There appear to be two types of this condition. In one the loss of vision is partial and the recovery is steady and gradual. In the other type there is usually total blindness of one or both eyes, which remains unaltered for a time and is recovered from either rapidly or instantaneously. Some cases of the latter type have been treated with success by suggestion.

In one such case of one-sided amaurosis I put the sound eye under the influence of atropine and found that the patient continued to read books with his blind eye, although he averred, and firmly believed, that he could not distinguish light from dark with it. Some days later I examined his vision at the test types and found that his vision in the good eye, under atropine, was 6/18. (There was a low degree of hypermetropia.) Covering the good eye, the vision was "No perception of light." I then uncovered both eyes and placed before the good eye a plus lens sufficiently high to fog it completely. The vision with both eyes was still 6/18. I succeeded in demonstrating the fallacy to the patient, and he then read 6/18 with his previously blind eye. He was even more pleased with this result than I, and I am convinced that he was not malingering. I then omitted the atropine, and it was interesting to note that as the vision in the atropinised eye improved the vision in the amblyopic eye improved, until both were normal.

4. In a few of these cases an eye which formerly could see perfectly without a glass now requires a plus lens to bring the vision to the normal. The explanation of these cases must be that a hypermetropia which formerly was overcome by an effort of accommodation, and so latent, has become manifest. This would appear to be a muscular asthenia localised to the ciliary muscle.

From a consideration of the cases in which the defect is unequal in the two eyes one may arrive at the following conclusions: 1. If the shell burst to one side of the patient the eye on that side is likely to be more affected. 2. If one eye was struck by a fragment of shell or earth that eye is likely to be more affected. 3. If one eye had a greater error of refraction than its fellow it is more likely to be affected. Allied to this condition are the cases of cured squint recurring after an explosion.

WOUNDS OF THE GLOBE.

Wounds of the globe present the most important and the most difficult problems because of the possibility of the occurrence of sympathetic inflammation—i.e., a cyclitis occurring in an eye as a result of a wound of its fellow. It is tolerably certain that sympathetic cyclitis is never caused by a non-penetrating injury. In connexion with wounds of the globe one has to answer the question: Is this eye a danger to its fellow? If it is decided that an eye is dangerous it should be removed as early as possible. Although sympathetic trouble never develops within ten days of the injury, and rarely within three weeks, a considerable portion of this period of grace has already elapsed by the time the patient arrives in Malta. It is impossible to dogmatise on this subject, but it is helpful to remember that the two conditions which are especially liable to lead to sympathetic cyclitis are wounds in the ciliary region and wounded eyes which are shrinking.

Although it has never been proved, it is extremely likely that sympathetic cyclitis is due to a micro-organism, presumably one which has a special liking for uveal tissue. If this be so it is easy to understand that the chief consideration in deciding whether an eye is dangerous or not is whether it is inflamed or quiet. In certain groups of cases the decision to remove the injured eye or to spare it is easy to make. In this connexion I may quote two cases of somewhat similiar injuries.

1. Corporal, R.M.L.I, under the care of Fleet-Surgeon Bishop at R.N. Hospital, B——. On April 25th, 1915, he was struck in the face by several fragments of a hand grenade. Fleet-Surgeon Bishop removed a splinter of steel, 1 inch in length, from the right outer canthus. I examined the fundus and found a clean wound of retina and choroid behind the equator, in a position corresponding to that of the foreign body. The vision was 6/6, the eye was quiet, and there was no doubt that it was a sound eye.

2. Private, 1/9th Battalion Manchester Regiment. On Oct. 18th, 1915, a hand grenade exploded near him and he was struck in the left eye. He went to the Field Ambulance, where a spicule of metal was removed from the eye. The medical officer sent him to the base with some excellent notes, and a letter in which he expressed the hope that the eye might be saved. I saw him on Nov. 12th and found a scar concentric with the limbus and 6 mm. from it. The vision was reduced to perception of light, the tension was −3, and the eye was irritable. There was in this case not the least doubt that the eye was dangerous and should be removed.

If one eye is ruptured it should be removed. If both eyes are ruptured as a rule they should be left. There is no question of further damage from sympathetic trouble, and it is kinder to allow a blind man slowly to realise the calamity which has befallen him than to convert the faint hope of

some return of vision, which he cherishes, into the certainty of blindness by removing the ruins of his eyes. If a wounded eye is blind it should be removed. If a wounded eye has poor vision and is irritable, especially if it is soft, and still more if it is tender, it should be removed. If a wounded eye has good vision but is irritable it should be watched and given an opportunity to quiet, the period allowed bearing some relation to the degree of vision it possesses.

In border-line cases where one is in doubt the tendency should be to remove the eye. I would rather remove many damaged eyes unnecessarily than allow one patient to become blind through my fault. I have already indicated that in watching a doubtful case the appearance of fresh, or the non-subsidence of existing, signs of inflammation are indications for removing the eye. With regard to the sound eye the signs to look for especially are photophobia, lacrymation, and circumcorneal injection. These constitute the clinical picture of "sympathetic irritation." This is not an early stage of sympathetic cyclitis, and may indeed be produced by so common and trifling an accident as the lodgment of a foreign body under the upper lid, but it is an indication that all is not well with the other eye, and is therefore a most valuable danger signal. An examination which should always be made of the sound eye when its fellow is on probation is the measurement of the shortest distance at which the eye can read small type. If this "near point" is found to recede it indicates paresis of accommodation, and this is often the earliest sign of sympathetic cyclitis.

Except that it may carry micro-organisms a foreign body does not in itself cause sympathetic trouble, but if it be retained there is the added factor of the irritation due to its presence, and it is reasonable to suppose that this may determine that a small dose of organisms, which the eye might otherwise dispose of, may establish themselves. From this point of view it is important to know whether a wounded eye contains a foreign body. In some cases it is possible to see the foreign body on ophthalmoscopic examination; in the majority it is necessary to employ localisation by means of X rays. The most satisfactory method of localising metallic particles in the eye by X rays is to make a stereoscopic pair of pictures and to estimate the position of the foreign body in relation to a known body, which is in some known relation to the eye, by measuring the relative displacements of the shadows of known and foreign bodies. (Here followed a description of the apparatus used.) Whatever method is adopted it is essential that meticulous care be taken over all measurements and adjustments. Above all it is necessary that the patient do not move his eye during the examination.

A retained foreign body having been demonstrated it must be decided whether the eye will tolerate its presence or not. The degree of irritability of the eye (circumcorneal injection, photophobia, lacrymation) and the amount of inflammatory reaction in the neighbourhood of the particle, if it can be seen, assist in the decision. If the foreign body cannot be seen the examination of the field of light is of assistance. As a rule, the farther back in the eye the better is the foreign body tolerated, and one fixed in the retina is better tolerated than one in the vitreous.

If it be decided that the particle will not be tolerated the alternatives are removal of the particle and removal of the eye. It is unfortunate that the majority of metallic foreign bodies met with in war injuries are composed of lead, so that they cannot be removed by the electro-magnet, which is the only method at all satisfactory. On the other hand, lead is less soluble and less irritating than iron, and is therefore better tolerated. Iron particles retained in the eye, even if tolerated for a time, usually cause its eventual degeneration.

Trooper, 5th A.L.H. On Sept. 24th, 1915, at A—— he was looking through a loophole in a steel shield when a bullet splashed on the margin of the loophole and he was struck in the right eye. On Oct. 9th the vision in the eye was 6/12. There was slight circumcorneal injection. There were scars at the periphery of the cornea and the iris. X ray examination indicated that there was a flake of metal, triangular in shape, measuring 1 mm. by 1 mm., 19 mm. behind, 6 mm. external to, and 7 mm. below the central point of the cornea. The pupil was then dilated and the foreign body was seen, embedded in the retina, at the point indicated by the X ray examination. There was then no inflammatory reaction in the retina, although a little pigmentation appeared later. Two months after the injury the eye was perfectly quiet and the vision in the injured eye was 6/9.

Private, 10th Battalion A.I.F. On July 30th, 1915, at A—— a grenade struck his bayonet and exploded. Right orbit contained numerous foreign bodies; one in eye. Vision = fingers at 1 metre, eye irritable. Attempted removal; evisceration done. Foreign body was a fragment of lead.

REMOVAL OF EYE: METHODS OF OPERATION.

The subject of sympathetic cyclitis is a very difficult one, and when everything has been said about it the thing which most impresses me is the maxim: "One good eye is better than two bad ones." If it is decided to remove an eye there are two ways of doing this—by excision and by some form of evisceration. In removing an eye which is dangerous from the point of view of sympathetic cyclitis the object is to remove the uveal tract, which is the source of infection. This is done with certainty by excising the globe, and it is sometimes wise to do this. The disadvantages of this operation are that there is some risk (a small one, I think) of infecting the meninges from a septic conjunctiva, and that the stump resulting does not well support an artificial eye.

The old operation of evisceration consists in making a stab incision into the globe just behind the ciliary zone—that is, about 7 mm. from the obvious corneo-scleral junction, completing a circular incision through all the coats of the eye with scissors, and turning out the contents of the sclera. After this operation healing is sometimes delayed because the cut edge of the sclera is exposed and sloughs. Also if the stump is sutured there is often a pretty severe reaction. To obviate these defects an operation has been devised which consists in dissecting conjunctiva, Tenon's capsule, and muscles off the globe, removing the cornea, turning out the contents of the sclera, and then cutting away the sclera except for a small frill around the optic nerve. This is probably the safest operation, but it has still the disadvantage of leaving a poor stump. If the old operation be compared to the "no flap" circular amputation which has been performed on war injuries of the limbs, the operation just described may be compared to an amputation with a long flap and almost no stump.

The operation which I have been performing in the majority of these cases is an amputation of the anterior part of the eye, leaving the longest stump which can be covered by the flap of conjunctiva. Conjunctiva and Tenon's capsule are divided circularly, going behind the wound if possible, otherwise excising it. These membranes are turned back as a cuff for at least 1 cm., and the anterior part of the eye amputated at this level, or farther back if that is rendered necessary by a scleral wound. The contents of the sclera are turned out and every trace of choroid removed by means of gauze mops held in pressure forceps. If the conjunctival sac was clean the conjunctiva is closed by three sutures. If it is thought desirable to drain the cavity this is done by a wisp of gauze and a long suture inserted in the conjunctiva, which is tied at the end of 24 hours, when the drain is omitted. Healing occurs in about five days, there is no reaction, and a good movable stump results.

An operation which has some place in war ophthalmology is exenteration of the orbit. This consists in removing the whole of the contents of the orbit except the periosteum. The object is to provide the fullest possible drainage for the orbit. I have done this in two cases.

1. Private, Otago Battalion, N.Z.E.F. On August 8th, 1915, he was struck in the right eye by a rifle bullet. On the 10th, on a hospital ship, the eye was excised. He was admitted to H—— Hospital on the 16th. The wound of entry was at the root of the nose; the wound of exit was in the right temple, 1 inch behind the external angular process of the frontal bone. The lids were greatly swollen and the orbital contents were very sloughy. Next day his temperature was 103·4°, and on examining the orbit there was what appeared to be gangrenous brain at the apex. This, an error of observation, proved to be sloughy ocular muscles. Exenteration was performed, and it was found that, in addition to the exit hole in the outer wall of the orbit, there were fractures of the roof, floor, and inner wall. The subsequent history is of interest. The orbit remained perfectly clean and the temperature settled, but 11 days after operation there was a rigor, with the temperature rising to 105°, and the right side of the head was œdematous. Next day the œdema was more marked and there was tenderness over the jugular vein on that side. A diagnosis of thrombosis of the cavernous sinus was made, and the question of performing a craniectomy was discussed. I decided to wait for another rigor, but this did not occur, and the condition cleared up. At a later date the cavity was covered with Thiersch skin-grafts, and a soundly healed socket resulted.

2. Private, 7th Battalion Royal Munster Fusiliers. On August 17th, 1915, he was lying in the open, firing, and a grenade exploded close to his right side. He was admitted to H—— Hospital on the 27th. There was a large irregular wound of entry at the middle of the right supra-orbital margin; no wound of exit. The right eye was blind, much proptosed, and practically immobile. The conjunctiva was chemosed below. X ray examination showed two large foreign bodies, one in the orbit, behind the eye, and the other in the frontal sinus. The orbit was exenterated and the frontal sinus, which was in communication with the orbit and had dura mater exposed in its posterior wall, was freely opened and drained into the orbit. The subsequent progress was uneventful.

When the bullet entering the orbit traverses the brain the orbital condition is, of course, of minor importance. (Slides were shown of the brain of a patient who was struck by a rifle bullet at the inner side of the right orbit. The bullet left the orbit at its apex, where there was a large hole in the sphenoid, traversed the brain, and made its exit above the right ear. The patient died on the day after admission.) Reference has already been made to the injuries to the optic nerve and retina produced by the passage of a bullet through the orbit. (Slides exhibited showed typical fundus pictures of the lesions produced.)

THREE CASES OF FOREIGN BODY IN ORBIT.

I will quote three cases of foreign body lodged in the orbit in which the eye was spared. Of these, the first was under the care of Colonel Charters Symonds, to whom I am indebted for permission to quote it. The other two were under my care at H——.

1. Private, 5th Wiltshire Regiment. On August 15th, 1915, he was struck in the right side of the face by a rifle bullet. There was a wound of entry ½ inch below the right malar bone; no exit. The patient complained of nothing until two days later, when the left eyelids swelled. On the 28th there was marked proptosis of the left eye, with moderate chemosis of the conjunctiva. The upper lid was much swollen. The ocular movements were much restricted in all directions except down. There was diplopia in all directions. The pupil and fundus were normal. No accurate estimation of the vision was made, but this seemed to be perfect. In the succeeding days the proptosis increased and there was much pain. On Sept. 2nd Colonel Symonds exposed the outer wall of the orbit in the left temporal fossa and opened it with a chisel. On incising the orbital periosteum the point of the bullet was seen and it was readily removed. The wound was drained and, except for the drainage opening, healed primarily. After the operation the eye at once receded, and three weeks later the ocular movements were nearly normal and there was little diplopia.

2. Trooper, Otago Mounted Rifles, N.Z.E.F. On August 9th, 1915, he was struck by a rifle bullet in the right side of the head. He was admitted to H—— Hospital on the 16th. There was a wound of entry in the right temple, 2½ inches behind the external angular process of the frontal bone and 2 inches above the zygoma; no exit wound. There was slight proptosis and slight chemosis of the conjunctiva below. The lower lid was swollen and tender. There was diplopia to the right and below. X ray examination showed the bullet lying obliquely in the floor of the orbit. On the 26th the orbit was opened through an incision along the infra-orbital margin and the bullet found halfway back on the floor of the orbit and readily removed. Recovery was uninterrupted, and two months later the ocular movements were perfect, there was no diplopia, and the vision had improved to 6/9.

3. Lance-Corporal, 27th Battalion A.I.F. On Oct. 7th, 1915, he was in a fire-trench when a shrapnel burst overhead and he was struck by a ball. He was admitted to H—— Hospital on the 13th. There was a wound of entrance at the nasion; no exit wound. The left eye was blind and much proptosed and there was a great deal of chemosis. The eye was directed up and a little out and almost immobile. X ray examination showed a shrapnel ball far back in the orbit in its inner wall. In the next ten days the conjunctiva became cleaner and the proptosis diminished. On the 23rd an incision was made through the conjunctiva on the inner side of the eye and the inner wall of the orbit exposed. A large fragment of loose bone was removed and on full retraction of the eye the ball was seen lying in a cavity in the posterior part of the ethmoid and removed. No sutures were used. The wound healed rapidly and some vertical movement of the eye was regained. (A diagram of the fundus condition was shown.) There was simple atrophy of the optic nerve, several hæmorrhages in the neighbourhood of the disc, and a large triangular area of atrophy of retina and choroid to the inner side, where these coats were bruised by the ball. His left eye, although blind, is better than an artificial eye.

Presidential Address

ON

DISEASES OF THE THROAT, NOSE, AND EAR, AND THEIR TREATMENT IN HUNTER'S TIME.

Delivered before the Hunterian Society

BY W. H. KELSON, M.D. LOND., F.R.C.S. ENG.,

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GENTLEMEN,—When looking up the subject of this address I was at first afraid that I had, in vulgar parlance, "bitten off more than I could chew." There seemed for this period to be plenty of accounts of visceral diseases and of the physicians treating them, of obstetric matters, and of great surgeons removing limbs, &c., with extraordinary rapidity and skill, yet the accounts of diseases of the regions chosen appeared distinctly sparse, and in the case of the larynx practically nil, the laryngoscope not being in use at this period. However, descriptions have been found of affections of these parts, by Fothergill, Cheselden, Pott, Huxham, Bell, and Sharpe, amongst others, and from these writings this lecture has been largely borrowed. Owing, I take it, to the physicians, surgeons, and obstetricians then being the predominating powers a somewhat curious colouring is given to the descriptions, throat, nose, and ear diseases being frequently compared with those of the rectum, vagina, and urethra, and a suppurating ear likened to gonorrhœa.

DISEASES OF THE THROAT.

Let us first take the throat.

The Tonsils.

A surgeon writes that the tonsils or amygdalæ may be in an enlarged state, a condition in general termed a scirrhosity of the tonsils, but this he thinks is not a good term, as except for their firmness they have no characteristics of a scirrhus. They are, however, very apt to inflame, and the additional bulk may produce nearly a total obstruction to the passage of food and drink. The author states that he has never known an enlarged tonsil become cancerous, and another contemporary surgeon says that this is the only tumour of a scirrhus kind which does not return on removal.

As regards treatment, when the enlargement is so great as to interfere with the passage of food and air there should be no hesitation as to operation. After discussing the repeated application of the cautery, excision with the scalpel and with the crooked scissors, these are looked upon less favourably than removal by the ligature. This should consist of soft silver wire or catgut passed through a crooked double cannula, which is introduced through the nose, and the ligature then adjusted round the tonsil by means of the fingers in the mouth; the cord being made tighter from time to time, the swelling will soon fall off.

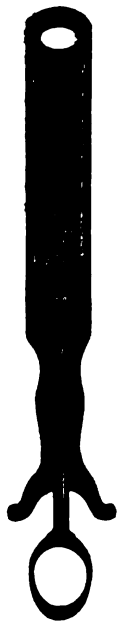
It is advised that the ligature be passed through the nose to avoid the inconvenience caused by it and the cannula hanging out of the mouth during the cure. Both tonsils are generally enlarged, but the removal of one may suffice to give the necessary opening for the food; but when it is found desirable to remove both they should be operated upon separately. Any inflammation produced by operating upon the first is allowed to subside before any attempt is made to remove the other. A similar method with cannula and ligature is recommended for the removal of other tumours of the pharynx and œsophagus. Where the tumour is not pendulous but has a very broad base it may be necessary to pass a needle threaded with a double ligature through it and tie each half separately. If the tumour does not fall off by the first ligature another must be applied, and the process continued till the cure is complete.

Extirpation of the Uvula.

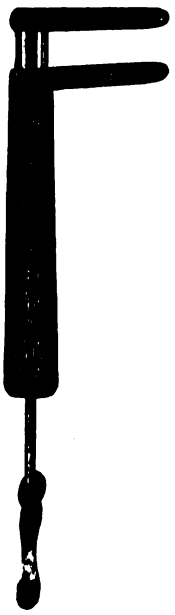
A slight enlargement of the uvula should be treated with strong infusion of red rose leaves, Peruvian bark, or oak bark, with a due proportion of alum or vitriolic acid. When, however, these fail and the tumefaction of the uvula is so considerable as to create much uneasiness in the throat,

with coughing, retching, or vomiting, extirpation must be performed. (Fig. 1.) This should be by excision or ligature. Where this structure is simply elongated excision should be performed with a curved, probe-pointed bistoury or scissors, the mouth being kept open by a speculum oris (a kind of gag). (Fig. 2.) If hæmorrhage supervenes it may be checked by an astringent gargle, ardent spirits, or lunar caustic. If the uvula, on the other hand, be thick and fleshy,

FIG. 1.* FIG. 2. FIG. 3.



Uvula guillotine. (Bell, plate lii., Fig. 1.) Scale ½.



Gag. (Bell, plate liv., Fig. 1.) Scale ½.



Tongue depressor with concealed knife for scarifying tonsils and pharynx. (Bell, plate liii., Fig. 1.) Scale ½.

it should be removed by ligature for fear of hæmorrhage, and this may be passed through either the nose or mouth, as in removal of the tonsils.

Scarifying and fomenting are recommended in inflammatory conditions of the amygdalæ and adjacent parts, and an instrument consisting of a tongue depressor with a concealed knife-blade is shown (Fig 3); also a can with a flexible tube attached for the inhalation of steam.

"*Sore Throat with Ulcers.*"

A physician writes that about this period a disease came prominently under notice termed sore throat with ulcers, or malignant ulcerous sore throat. It appears to have been first noticed in Spain, Italy, Malta, and other countries bordering the Mediterranean in the seventeenth century; now (1747) it seems to have taken up its abode in England, being especially active in the autumn and early winter. It generally attacks children, and more often girls than boys. It appears to be intensely infectious, and if the healthy are not kept apart from the sick, they apparently receive the disease by means of the breath.

The disease generally comes on with giddiness and shivering like an ague fit followed by great heat; also great pain in the head, heat and soreness of the throat, stiffness of the neck, purging and vomiting, and intermittent sweating. On examination of the mouth and throat the uvula and tonsils appear swelled, and the palate, cheeks, and pharynx are of a florid red colour which affects also the tonsils themselves. Instead, however, of the redness a broad patch, irregular in shape and of a pale whitish colour, may be seen surrounded by florid red. The second or third day the white places become more ash-coloured, and it may be seen that really a slough is present concealing an ulcer. All parts of the fauces are liable to these ulcerations, but they most materially affect the tonsils and parts immediately above them; also the pharynx behind, the inside of the cheeks, and base of the tongue are common situations. The ulcers may be superficial or deep. The parotid glands become hard and swollen, and great swelling of the neck may occur.

Pimples appear on the arms, face and hands, and other parts appear of a deep red colour. The uvula and tonsils are sometimes so much swelled as to leave but a very narrow entrance into the gullet, this entrance being frequently surrounded with ulcers or sloughs. The patients often complain early in the disease, before ulceration sets in, of a putrid smell appearing to emanate from the throat and nostrils, which latter as high up as can be seen appear of a deep red colour, and a thin, irritating, bloody discharge may come from there and from the mouth. Free bleeding from the nose at the beginning of the disease is common; in fact, hæmorrhage from the nose and mouth may prove fatal. The disease generally appears at its height about the third day.

As to treatment, bleeding and purging cannot be recommended as they only do harm. The ulcers in the throat must have watchful attention, but the sloughs should not be detached with a probe as they only re-form. Stimulating aromatic gargles are strongly recommended, with antiseptics and detergents—sage-tea, vinegar, tincture of myrrh; also the injection of liquids containing these medicaments with a small syringe is advised. This must be assiduously repeated, as great stress is laid on the danger of putrid materials passing into the stomach. Should hæmorrhage come on from the throat or nose clysters should be given and vinegar applied if possible to the bleeding spot, and the patient kept in the sitting posture or the head well raised, and the upper parts kept cool. If these methods do not immediately take effect we are advised to have recourse to the more efficacious ones, amongst which we may rank the bark and opium.

DISEASES OF THE NOSE.

Passing on to affections of the nasal cavities, these are divided into hæmorrhages from the nostrils, ozæna, imperforated nostrils, and polypus excrescences.

Hæmorrhages from the Nose.

After stating that hæmorrhages from the nose are generally but of very little importance, the author says that in some instances the reverse is the case, and bleeding from these parts may be highly embarrassing to practitioners and very hazardous to patients. In slight cases the sufferer should be placed in a large apartment with cold air passing through it, his food and drink should be cold, he should bathe the face with cold water and vinegar, and gargle a solution of alum, whilst cold compresses are applied over the nose. A return of the hæmorrhage should be prevented by a moderate use of cooling laxatives and a low regimen.

In severe cases, however, pressure must be resorted to, but when the source is deeply seated this may be both difficult and uncertain. A dossil of lint may be pushed up, but much reliance cannot be put upon this method. A better way is to insert by means of a probe or director a piece of hog's gut tied at one end so as to form a tube. This should be pushed along through the nose to the upper part of the pharynx. This instrument should now be filled with cold vinegar or water by means of a springe inserted into the end hanging out of the nostril which should afterwards be secured by a firm ligature. If this is not effective, it is recommended to try an instrument resembling Bellocq's sound by means of which bolsters of lint are introduced into the posterior nares.

Ozæna.

Ozæna is described as a name specially applied to foul ulcers of the nose discharging a fœtid matter. Caries is usually present. The chief cause is cold, but external violence and irritating substances may also produce this condition.

When the system is not affected by any other disease, this is the most simple form of ozæna and astringent applications must be relied on chiefly, such as decoction of walnut leaves, Peruvian or oak bark with solution of alum: also brandy or any other ardent spirit and lime-water. These should be applied three times a day on dossils of lint pushed up as far as is necessary, and at bed-time ointment containing calcined zinc or lapis calaminaris should be used. By persistence in these means every ulceration depending on local affection will be at last removed, but the running produced by other diseases, especially matter in the

* From A System of Surgery, by Benjamin Bell. Illustrated with copper-plates. Vol. IV. Edinburgh: Charles Elliot. 1786.

maxillary antrum, may resist every effort made for its removal. This affection is referred to by John Hunter himself in his practical treatise on diseases of the teeth, and it is advised that the matter be evacuated either through a tooth socket or the canine fossa. The nasal route, it is interesting to note, was at this period advocated by some, but was not popular. Again, when the matter discharged from an ulcer in the nose is thin and fœtid, and of a brown or blackish colour, there will be reason to suspect from this that the bones are carious, but if any doubt remains a probe should be introduced. In caries also the peculiar fœtor of the matter discharged is very noticeable. Lues venerea should always be thought of as the most probable cause in these cases, and the patient should be put on a long course of mercury. Indeed, from whatever cause arising, the mercury will probably do no harm. The spongy bones are apt to produce fungus excrescences, to which corrosive applications may be occasionally applied, such as ointments containing verdigris or red precipitate, the nose being kept clean by means of an astringent antiseptic wash.

By this practice many cases of ozæna will be cured, but it must nevertheless be acknowledged, says the author, that no remedies with which we are acquainted can with certainty be depended on.

Occlusion of Nostrils.

The writer goes on to note that whilst the anus and vagina are not infrequently imperforate at birth, nevertheless, as is well known, the nostrils are much more rarely so, but more frequently they are more or less occluded as the result of small-pox, burns, and venereal sores. If breathing is much obstructed the openings must be enlarged with the director and bistoury and kept open by means of dossils of lint, or better, by means of metal tubes covered with leather spread with an emollient ointment, frequently removed for cleansing purposes.

Nasal Polypi.

The author states that every part of the nasal cavity and back part of throat are liable to excrescences called polypi after the "insect" of that name, which they are supposed to resemble. After noting their difference in colour and firmness and their protrusion in thick, damp, hazy weather, and retraction in dry, he goes on to say that whilst the soft ones are painless, the firm are often painful and ulcerated and may become cancerous. The soft ones, on the other hand, may cause perplexity as they increase in size, by falling down on the lip, and also interfere with deglutition and respiration by passing far back into the fauces, and in some instances they become so very large as to elevate, separate, and dissolve the firm bones of the nose. The author goes on to discuss the view held by some that polypi are due to scrofula or venereal affection, but rejects the same.

FIG. 4.



Nasal snare. (Bell, pl. xliv., Fig. 4.) Scale ½.

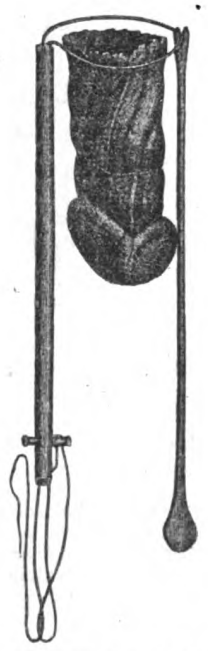
As regards treatment, he makes the statement that the risk of removal is nearly in proportion to their firmness; consequently a much better prognosis should be given as regards the soft variety. These, which are largely affected by the weather, may frequently be prevented from acquiring any additional bulk by the use of applications such as a strong solution of alum or ardent spirits. As to removal, the following methods are discussed: the use of caustics and the actual cautery passed through a metallic tube, the passage of a seton through the diseased nostril, the use of scissors, scalpel or forceps, and the application of a ligature round the neck of the tumour, this last being selected as the best.

The manipulations are the same as those used in Paris for the removal of polypi from the vagina. For those lying well back and projecting into the post-nasal space it is recommended that a silver-wire loop be passed through the nose and hitched over the tumour by means of a finger passed in through the mouth. The ends of the wire which are hanging out of the nose are now passed through a double cannula (Fig. 4), which is pushed home and left in this situation till the following day. The wire is then tightened up, and this being duly repeated the excrescences will drop off sooner or later. Caution is advised in drawing the wire with much force to obtain greater compression, as hæmorrhages would thereby be produced.

Excrescences on the pharynx and œsophagus may also be removed in the same way. Where the application of the ligature is difficult and tedious it is proper to secure an easy and free respiration during the operation by previously performing bronchotomy. By this means no additional risk is incurred, for it may with ease and safety be accomplished, and it puts it in our power to finish the operation more perfectly than we otherwise could do.

As regards applying a ligature to polypi in the anterior part of the nose, this is done with the aid of a split probe (Fig. 5), by means of which the loop is gradually pushed up to its root. The ends are afterwards passed through the double cannula and tied to the wings of the instrument, being daily pulled somewhat tighter till the tumour drops

FIG. 5.



An unusual form of polypus seized by snare; also split probe to assist in getting wire over same. (Bell, plate xlvi., Fig. 1.) Scale ½.

FIG. 6.



Nasal forceps. (Bell, plate xlviii., Fig. 1.) Scale ½.

off. If, however, the forceps be preferred the patient ought to be firmly seated with his head leaning back and supported by an assistant. As it is very desirable to discover the origin of the excrescence, if possible the face should be placed so that the light of the sun falls into the nostril. One blade of the forceps being inserted on each side of the polypus, it is twisted or torn out. (Fig. 6.)

Beginners, who are apt to desist before the operation is nearly finished, are advised not to be frightened at the hæmorrhage which may occur, for, as a rule, this should not be regarded as long as any more polypi can be removed by the forceps. On the day after the operation if the bases of the polypi can be seen lunar caustic may be applied through a cannula.

When the polypus is very deeply placed and attempts to remove it with forceps or ligature fail, a seton or bougie passed through the nostril into the throat may prove useful by pressure. A case is mentioned in which a silver tube covered with plaster was employed, the plaster being fixed to the upper lip; the breathing, which before had been interrupted, went on freely.

Various kinds of forceps were employed, and one kind highly recommended for large polypi was introduced after

the manner of midwifery forceps—viz., by inserting the blades separately and then locking them. When the polypi are so large that it is impossible to insert the forceps the nostril may be laid open by a longitudinal incision, the parts being afterwards reunited by plasters or stitches.

Views of Another Surgeon on Polypi.

Another surgeon, speaking of the polypus of the nose, says it is a complaint always troublesome, frequently painful, and sometimes hazardous. The first is the necessary consequence of the situation of the distemper; the second arises from its peculiar nature in the individual; and the last sometimes from its particular nature and sometimes from the manner in which it has been treated.

He mentions that polypi have been divided as regards their pathology into strumous, venereal, and cancerous; but lays stress on the fact that a clear distinction must be made between the form which is painful, red or purple, hard, and fixed, yielding an ichorous or bloody discharge; and the non-painful form, which is soft, movable, greyish in colour, and distilling a clear lymph. The former kind he recommends should never be touched, as by so doing one will only make matters worse; but the second variety should be removed, preferably with forceps. Of this latter benign form there are two varieties: the first provided with a stalk or peduncle, the second merely an elongation of the membrane covering the ossa spongiosa. These latter often break and come away piecemeal.

The writer prefers the forceps to the ligature and bans escharotics and setons. Should the polypus make its appearance backwards, in the fauces behind the uvula, the instrument had better, nevertheless, be introduced into the nose, as attempts to seize it through the mouth set up spasm, and also the uvula is liable to be laid hold of, to the no small detriment of the patient. The young practitioner is cautioned against confounding the benign with the malignant form, as the writer has seen hæmorrhages which have been frightful and inflammations which have proved fatal as the result of this mistake. He also mentions a case in which an untoward-looking polypus which was attached to a distempered septum nasi came away with it, and a similar thing happened with the os palati.

DISEASES OF THE EAR.

Finally, let us turn to diseases of the ear, which are but sparsely referred to. One surgeon, after pointing out that deafness may be due to the stopping up of either the meatus externus or the tuba Eustachiana, goes on to say that any preternatural fulness of the amygdalæ or tonsils is always attended with some degree of deafness. From this latter cause also venereal ulcers in the throat and polypus excrescences, by compressing the tube, are frequently productive of the same result, and a cure will be accomplished by their removal. On the other hand, if the tube has been obliterated by inflammation it will be in vain to employ any means whatever, though it has been proposed to open it by a curved blunt probe or injecting a little milk-and-water through a curved syringe. This, however, the writer believes to be a very difficult procedure in the living subject, though feasible in the dead body.

Passing on to obstructions in the meatus externus, imperforated meatus auditorius is first discussed and its relation to the imperforate state of other passages in the body. An incision with a small sharp bistoury is recommended, and afterwards a bit of bougie properly oiled should be introduced and retained till the cure is complete. In this way the writer affirms that deafness in these cases may always be removed—a result much more satisfactory, one may note, than is obtained at the present day. It is recommended to operate about the time when the child is beginning to talk.

In reference to foreign bodies, the introduction of oil is recommended as a great stand-by, as it kills insects and also facilitates the removal of various impacted bodies. Syringing with warm water should be employed, but a small sharp hook or forceps may be necessary.

Polypus excrescence may occur in the external auditory meatus, and may be taken out either with the knife or ligature, a similar manœuvre being advised to that used in removing polypus of the nose—viz., by means of a double cannula. When, however, the growth is not pedunculated this manœuvre is impossible, and in that case the surgeon advises the use of well-oiled bougies, likening the disease to obstruction in the urethra, and he says the same remedy duly persisted in proves equally serviceable in both. He admits, however, that at first the bougies are apt to create some uneasiness by irritating the parts to which they are applied, but this soon subsides.

Deafness from wax is described, and the necessity for the examination of the ear in clear sunshine is accentuated in order to make an accurate diagnosis.

In scrofulous conditions the small bones of the ear may become diseased; in this case a great degree of deafness is produced which is never in any instance removed. In those cases all we can do is to keep the parts free from smell, which is most effectually accomplished by syringing with a little warm milk and water. Less serious discharges may be found in the ear and may be treated with astringent injections, which often prove effectual in gonorrhœa, such as a weak solution of alum, saccharum saturni, or French brandy.

Various instruments, he states, have been invented for the relief of deafness, but that having the form of a common horn answers the best. Small funnel-shaped devices to be worn concealed under the wig are also in use. Perforating the lobes of the ears was a very common operation considered of much more importance by those on whom it was practised than by the surgeon. The operation of burning behind the ear with a red-hot probe for toothache the writer says he cannot recommend, as he considers that most people would think the pain of the remedy more severe than the disease.

THE REMOVAL OF ADENOID GROWTHS.

BY J. L. AYMARD, M.R.C.S., L.R.C.P. LOND.

THE necessity for the removal of adenoid growths needs little emphasis, as the grave dangers caused by neglect of surgical measures are well known. I do not intend to take up valuable space by entering at all fully into clinical symptoms, etiology, &c., but will endeavour to deal with the causes and prevention of recurrence. With a few notable exceptions the diagnosis of post-nasal obstruction in the form of adenoids is now followed by a scraping or cutting process, blindly performed behind the curtain of the soft palate. The questions arise as to what is cut or scraped, and how far the present methods are effectual. Probably a large percentage of the cases so treated have early relief, and trouble attributable to the operation does not follow; but it is contended that many are partial or complete failures. As the usual surgical precautions are for the most part neglected, ought we not to be surprised rather at our successes than at our failures? There is no reason to attribute such failures to want of skill, but rather to inadequacy of instruments and neglect of precautions.

Etiology and Recurrence.

The medical profession almost unanimously has condemned the dummy teat as a cause, or at least a potent agency, and further, has it not decided that the non-passage of air through the nose is a factor? The child plays for a time with its dummy, which then remains quiescent between the lips, forming an effective plug. The dummy then may be regarded as an excellent preventive agent. As to the actual cause of adenoid growth, should we not rather look to chronic catarrh (quiescent only in the summer months)?

The question of recurrence really amounts to this. Children operated on not infrequently present the symptoms of adenoids at a later date. Were the adenoids removed in the first instance? However skilful the surgeon, unless he has fully examined the result of his work at the operation by the aid of the mirror, any opinion as to possibility of recurrence can be of little value. How many surgeons take this precaution, the urgent necessity for which no one denies? As to breathing exercises, few successes would be recorded were the results entirely dependent upon them. However, in children six years old and upwards, without the dentist's aid and a complete system of exercises, deformity will remain. Sir Arbuthnot Lane drew attention to the importance of this nearly 20 years ago. Recurrence or apparent recurrence of post-nasal obstruction seems due to at least three causes: incomplete removal; nasal obstruction not diagnosed, apart from hypertrophied pharyngeal tonsil; and absence of any appreciable adenoid growth with faulty

diagnosis, and subsequent development. The specialist is, as a rule, at a disadvantage in that he sees his patient probably once prior to operation and seldom afterwards. If unsuccessful the case is taken elsewhere. The general practitioners, however, see their patients grow up, and opinion appears to indicate that no matter who the operator recurrence is somewhat frequent. Nevertheless, postponement, once the disease is established, can only lead to disaster, whereas a second operation is surely not such a serious matter.

The Dangers of Operation.

In considering the danger of the anæsthetic, let the administrator bear his share of responsibility. With one notable London exception, surgeons prefer a light condition of anæsthesia, leaving ample margin for safety. Does the child who dies a few hours later succumb to the effects of this light anæsthesia? Is not the collapse due to the continual swallowing of blood from the torn vessel? Surely it is our duty in all cases by direct observation to make certain that hæmorrhage from this operation has ceased before proceeding to the removal of the palatine tonsils. The question of secondary hæmorrhage can then be established as a certainty. The absence of almost any efforts to render the operative area aseptic before and after the operation must tend to account for some inflammatory conditions, whilst blindly cutting or tearing without definite diagnosis probably accounts for other well-known serious results. Finally, the dangers of the operation will still further be reduced when such cases are everywhere treated apart from the out-patient department of general hospitals, and not as at present only in certain up-to-date institutions.

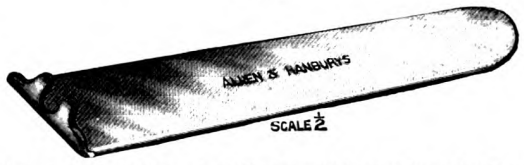
Methods of Examination.

Examination by mirror.—In almost every modern text-book this means of diagnosis is recommended, and stress is laid upon the necessity for patience and experience as the keynote of success; and yet in how many hospitals is the procedure carried out? It would seem that the writers feel that diagnosis is incomplete without such examination. Suppose a hurried glance is obtained of the area behind the soft palate without this being raised, what is disclosed? If the pharyngeal tonsil has degenerated into an adenoid condition, only a distorted view of the growth from below will be apparent. It is not a question of experience, but one of facts. Probably only a small percentage of surgeons who operate upon the pharyngeal tonsil are familiar with its normal appearance, a study of which is essential to those who adopt the direct method advocated in this paper. The infant with cleft palate presents a convenient subject, making due allowance for the tonsil being slightly inflamed through irritation.

The diagnostic value of the finger.—That a forefinger forced up behind the soft palate can detect blockage by an enlarged pharyngeal tonsil, or a combination of tense palate and this, no one will deny. But as to the exact position and extent of the growth the value is questioned. When the growth has been removed, according to the text-books as well as universal opinion, loose tags can be felt and the patency of the post-nasal cavity established. After years of experience the writer must admit that he has not satisfied himself that he has acquired either art. Nasal surgeons will admit that in many cases the lower two-thirds of the tonsil may appear quite normal, but from the upper third as well as the neighbouring fossæ adenoid tissue will be found to extend well into the post-nasal space, and sometimes end in large masses of growth. Now let believers in digital examination take a medium-sized thimble 5/8 inch in diameter, compress it into an oval, and fill it with soap up to 1/8 inch of the rim. The oval will measure 3/4 × 1/2 inch, and will represent fairly accurately the size of the post-nasal openings or choanæ in the adult. Let the soap represent a growth 1/8 inch inside the post-nasal space, and no ordinary finger can reach it. On reducing this bony opening to that of the size of an average child of two years it will approximate 5/16 × 3/16 inch, making allowance for the mucous covering together with unhealthy inflamed condition. Thus the fallacy of establishing the patency or otherwise will be apparent. Under these circumstances, can any surgeon detect a partially cut mass of adenoid tissue pushed up these openings? A few blind tests in the post-mortem room will probably somewhat modify the deeply rooted belief in this method of diagnosis.

The direct method of examination.—The mouth being open 1½ inches, and the soft palate and uvula being out of the way, there is nothing to hinder a complete view of the pharyngeal tonsil, and in many instances a portion of the posterior wall of the nares. If the observer were looking in the space between the elevator and lower incisor he would see all that he required. This is in an adult, but the process is somewhat easier in a child, whose mouth relatively can be opened more widely. Instruments termed retractors have been designed to get the soft palate out of the way. The process is certainly

FIG. 1.

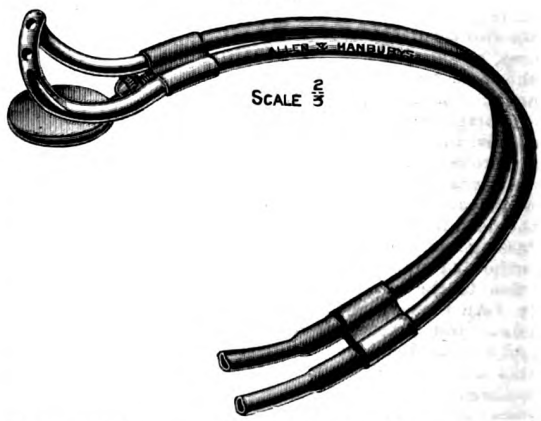


Author's palate elevator. A rigid flat metal plate 3/4 inch wide and 8 inches long, curved at one end so as to engage in the post-nasal floor.

not one of retraction, but protraction and elevation, and, more correctly still, one of stretching and elevating. Surgeons hitherto when designing instruments for this purpose do not appear to have appreciated the value of this stretching process, thus leaving the bony parts in the line of vision as little covered as possible. The posterior edge of the horizontal plate of the palate bone, as is well known, presents two concavities facing the posterior pharyngeal wall; each concavity meets in the centre, forming a prominence collectively known as the post-nasal spine, but which would more correctly be described as the horizontal portion of the crest of the palate bone. The palate elevator designed by the writer provides two hooks as seen (Fig. 1) which rest in these concavities.

Tongue depressor and mucus extractor.—Every surgeon is familiar with the one great difficulty in these operations—viz., the pharynx and buccal cavity being filled with mucus and, as soon as manipulation takes place, blood-stained mucus. It is one of the chief difficulties in post-nasal mirror examination. The action of the anæsthetic appears to create this condition, which is freely kept up. The introduction of swabs removes stringy quantities, only quickly to be replaced. Swabbing is objected to by some authorities, and probably not without reason. The piston

FIG. 2.



Author's combined mucus extractor and tongue depressor. It is constructed out of a single piece of metallic tubing bent as illustrated and connected at the two free ends with the rubber tubing leading to the Woulfe bottle. The mirror is shown in position for examination, but has been bent down so as not to obscure the apertures of the extractor. The mirror can be slid back along the stem when not required.

action might easily force fluid down the trachea, though the usual objection refers to the irritation of the palate supposed to be caused. For direct diagnosis purposes, for mirror work, and for subsequent examination and treatment it is essential if possible to extract all fluid from the pharynx as soon as formed. The accumulation of blood and mucus causing a danger from choking is given as the reason why

the anæsthetic should only be of a light nature. In order to avoid unnecessary instruments the writer has combined a mucus extractor with his tongue depressor. The latter is illustrated (Fig. 2), but the tubes, Woulfe bottle, and vacuum pump, with full particulars, are omitted for space, but are supplied by Messrs. Allen and Hanburys with the necessary instruments. The pump is a small but powerful automatic arrangement which fits the basin tap, the water running down the usual waste pipe. One small rubber pipe is led to the Woulfe bottle, which collects the fluid, and two rubber tubes are taken from the bottle to the tongue depressor.

Methods of Removing Adenoid Growths.

The action of the curette.[2]—If the nature of adenoid tissue and its usually loose attachment is carefully studied, the difficulty of cutting it will be realised. Curettes must be placed in at least two classes: those with blades and sides at right angles to their handles, and those with blades and sides thrown back at an acute angle. It is possible to cut with the former if very sharp, but the latter can never be other than part cutter and part scraper. Even with a sharp curette of the latter type the tissues must be drawn by the knife quite tense before any cutting action takes place. If experiments are made with the curette to which Sir StClair Thomson has attached a set of hooks it will be found that, given a large hypertrophy of the pharyngeal tonsil, it will probably tear and cut most of it away; but more often than not it will slip over a medium-sized growth, the supporting sides preventing the approach of the blade to the surface of the tonsil. The arch of the atlas below throws the curette handle upwards and the blade away from the surface of the tonsil. On the other hand, a similar curette with very short bend in the supporting arm is capable of cutting deep into the tissues behind the tonsil if pressure is made. The curette probably most in use is really a Beckman's with hooks and cage attached by Sir StClair Thomson, but described in some works as a Gottstein. The virtue of these hooks is not so much the catching of the growth when detached, which is unimportant, but engaging the growth, dragging it down, and allowing it to be separated by a semi-cutting and tearing process.

The difficulty attaching to all curettes is that the cutting is unnatural. In order to cut tissues satisfactorily there must be side-to-side movement or firm pressure against a solid substance. That many curettes do come in contact with a solid substance is evident by their frequent visits to the instrument makers. Another cause of failure of the curette, and one which is admitted by some authorities, is getting the knife over the top edge of the growth. A study of a fair-sized growth in position shows that the difficulty is a very real one. The blade parallel to the sides is the worst in this respect. Most blades are over ⅛ inch deep, and therefore unless the growth is conveniently pendant it must be pressed up against the vomer; having reached the angle of junction with the basilar process the downward movement takes place, and as previously pointed out no cutting or tearing takes place until the tissues are stretched tight. Therefore for at least a quarter of an inch the growth is left, and there is no reason why a second scrape should be more successful. The rake-like hooks curved backward added to the Beckman's curette make with the knife a depth of ¼ inch. This all has to be accounted for in getting over the top edge of the growth; therefore the tendency to squeeze it as a first procedure is apparent. The only form of blades likely to meet the above difficulty would be one on the principle of a Balenger's septum knife. This leaving-behind process is recognised, and some authorities advise removal with what are known as punch forceps. Punch forceps are suitable for cartilage or bone, but not soft slippery tissue such as adenoid. The punch forceps, however sharp, simply crush between the blades the tissue, which is subsequently torn away with any adjacent blood-vessels, and as one authority states not infrequently with long strips of healthy tissue. The ordinary curette as a means of removing growths from a recessed pharynx is, for obvious reasons, not discussed, but the interesting question is raised as to how common these conditions really are.

Preparation of patient.—With the facilities almost everywhere now it is very unwise to operate elsewhere than in a hospital or nursing home. The giving of calcium lactate to children for a few days previously is somewhat largely in vogue and undoubtedly wise in cases of the lymphatic type, but there does not seem sufficient evidence to show that in general such treatment will diminish the hæmorrhage from a torn vessel. The usual anæsthetic preparation is essential, as any vomiting of food is sure to lead to trouble. The teeth especially should be carefully brushed, and the mouth and pharynx washed out with peroxide prior to operation. The child should be admitted the day before operation and not discharged until the day after with due caution; the poorer the child the longer it should remain.

Removal of adenoids prior to tonsils.—In reversing the usual order great advantage will be gained. Evacuation of mucus and control of hæmorrhage ensure a complete and satisfactory operation together with a thorough examination.

The Direct Operation.

The position of the patient.—If the technique of the operation is strictly adhered to, the position of the patient for the usual reasons is unimportant. The writer prefers the prone position with head slightly raised. A light condition of anæsthesia is insisted upon and all haste abandoned. When the patient is sufficiently under the jaw depressor is opened up. The palate elevator is introduced very gently to the back of the pharynx and carefully brought up in contact with this. Its introduction will almost always cause a slight spasm of the glottis, the soft palate being gently raised several times until this passes off. The elevator then finally stretches the soft palate, and the hooks are brought forward to engage in the floor of the post nares. The surgeon holds the elevator firmly in his left hand between finger and thumb, his other fingers resting against the upper jaw, and introduces the tongue depressor with his right hand. Care should be taken to keep the elevator in the centre of the palate when engaging the hooks with the septum between.

The direct diagnosis.—At this stage a pause is made to make a complete examination. It will be found in some cases where the diagnosis has been made from the clinical symptoms that not only is this tonsil quite normal, but the post-nasal region apparently is also healthy. In these cases the writer has always found one or other fairly large tonsil pressing up the soft palate, which probably produced the symptoms. In a similar manner to the palatine tonsils, the pharyngeal tonsil may be in a temporarily quiescent state. The direct examination will at other times reveal, especially in older patients, adenoid conditions when least expected. The patient being in a prone position it will be found in some cases that the appearance of the tonsil is deceptive; being plastered down by mucus it may look fairly normal. It is therefore wise always very gently to dab the surface with a small pad of wool. It is then advisable to examine the tonsil with a blunt instrument, and no better will be found than the smooth end of a uterine curette. The growth if present should be lifted from below and also laterally. The upper position requires especial attention, where it often wraps round the vomer and joins varying-sized masses in the post-nasal spaces. The gentlest use of the curette only is permissible, otherwise hæmorrhage will spoil the view.

The more examinations are made by the direct method the more surgeons will become acquainted with the different forms these growths will assume, and until familiarity is obtained fairly large growths may be missed. It is quite common to find the centre of the tonsil apparently normal, when careful examination reveals a prolonged growth either on one or both sides arising from a base attachment to Rosenmüller's fossæ. To what extent would such a condition be diagnosed by the digital method? Supposing this lateral

[2] An illustration in our leading work, by Sir St Clair Thomson, headed "Removal of Naso-pharyngeal Adenoids" (p. 312, Fig. 168) calls for criticism, which the writer is certain will be taken in the spirit in which it is meant, and solely for the purpose of arriving at the truth. In this eminent surgeon's "Diseases of the Nose and Throat," in a photograph taken from an actual subject, it can be seen that the upper portion of the curette is not in contact with the wall, thus demonstrating that with medium-sized hypertrophies of this tonsil this curette slips over the growth leaving it to continue growing, later to be classed as a case of recurrence. The description under the picture says: "The cage opens to receive the growth." In order to open, it must be pulled or pushed. The cage requires a 5-ounce weight hung upon it before it opens, and no ordinary adenoid tissue pressing against these slender hooks can exercise a tenth of this pressure. In my view the cage does not open at all, and what is more, once the hooks are engaged in the growth, and downward pressure made, it is impossible for the cage to part company with the curette because the pull is towards it. Hooks fixed to the back of the curette would answer the same purpose as the cage.

growth to be on the right side, the finger introduced on the left would feel nothing unusual upon bringing it over to the right; while if the finger were inserted on the right side it would push up the growth in front of it. The direct method, however, shows clearly the growth and its attachment, and this only is removed. On the contrary, if the other method were used the question remains as to how much the normal tissue would be unnecessarily damaged. The writer recently found in a child aged 11 (presenting the typical adenoid facies) a large growth the size and shape of a gelatine jujube entirely situated on the right half of the tonsillar area, the remaining portion being normal. The right pharyngeal tonsil was also much enlarged, and the left apparently normal.

Having obtained the fullest information *in situ*, the next procedure is the passage of the smooth end of the curette very gently through each nostril in turn, the curette being kept parallel to the septum and just resting upon the floor of the nose; any blockage can be felt, and any bleeding will indicate probable adenoid growths. The hæmorrhage will be seen coming from each post-nasal space. After passing the post-nasal openings the curette is turned across and the handle raised. If obstruction is encountered it is, if possible, gently removed with the sharp end of the curette. This process has been adopted by the writer for several years, and probably accounts for freedom from cases of recurrence. The uterine curette is more suitable for young children than Meyer's ring. The size of the growth having been thoroughly estimated the elevator is transferred to the anæsthetist to hold. The next question is which is the better method of removing the growth.

Instruments for removal.—There is no more suitable instrument for the removal of adenoid tissue from a normal or recessed pharynx than a modified pair of long, very sharp surgical scissors. The scissors illustrated are curved into half a circle and fitted with two small interlocking hooks to catch the detached growth. The writer uses heavy scissors with fairly wide blades, though others will probably prefer a lighter and narrower instrument. (Fig. 3.) A second pair

FIG. 3.



Author's adenoid scissors. The blades are curved into half a circle and fitted with two small interlocking hooks to catch the detached growth.

of scissors are also used, curved only at the tips, to remove any remaining small portions. The crusher is similar in construction to the large scissors with the same semicircular curve, but the joint is larger and the hooks are omitted. The blades abut on one another, and the handles are interlocking. This instrument is used in the same manner as the scissors, and prior to them when the growth is large. The scissors are introduced closed and sideways, opened wide each side of the growth, pressed well back to the pharyngeal wall, and lifted up. They are then gently closed and brought slightly forward behind the growth. If the scissors are closed when pressing firmly against the wall more than the growth will probably be removed. If carried too high up the septum may be cut, though probably with little harm resulting. When the scissors are finally brought together a pause should be made, as this will partially crush the tissues and lessen the hæmorrhage. The scissors are then closed tight over and lowered down the wall and withdrawn. Immediately the scissors are dropped the crusher is introduced grasping a small pad of wool soaked in saline. It is better to use saline, as it is not likely temporarily to check hæmorrhage, subsequently to recur; adrenalin might have this tendency. The pad is held against the cut surface for 30 seconds, when, as a rule, any tendency to hæmorrhage will have ceased; if not, it must be vigorously dealt with by a deep suture or continual pressure. No surgeon is justified in proceeding to further operation until all bleeding has stopped. This method of removing adenoid tissue under observation must appeal to all surgeons, in contrast to the system of scraping the post-nasal space in the dark.

Selection of period for tonsil enucleation.—No question of emergency from danger of suffocation being likely to arise in ordinary inflammatory conditions there can be no necessity to choose such occasions, but in cases of diphtheria and certain septic conditions the operation should be the rule instead of the exception. No harm can be possibly done by removing the local focus of infection and thoroughly swabbing the naso-pharynx with iodine or peroxide, while the admission of air gives the child a chance, in conjunction with the usual injections, which in many cases will save life.

The Palatine Tonsils.

Methods of removal.—The almost universal practice at present is enucleation, but it would appear not to be fully realised that when this is done with a guillotine force is unnecessary. Those who do not use this method urge that the lingual together with flat palatine tonsils cannot be included. To a great extent the difficulties caused by leaving the lingual tonsil will seldom be encountered outside the text-books, and then, as Watson Williams states, we have here a disease of adult life. This should hardly be urged against such an excellent and simple operation. The only objection the writer has to the guillotine enucleation instrument is in its final action. The guillotine was designed to cut by pressing a knife between a split ring, and in this action it is for the most part a failure, but this very failure is a virtue in its new use. Efforts have been made to design instruments to crush and cut by two distinct processes, but as long as the split ring element is introduced the tissues cannot be cut clean, and therefore little advantage is to be gained. Most surgeons employ the method of pushing instead of pulling the guillotine on to the tonsil, and as these instruments were designed for the latter purpose strengthening is advisable. Force should never be employed, knack only is required. The surgeon who breaks a guillotine has much to learn. Reversing the blade to meet the above condition is open to question. Mr. Heath recently stated that he found surgeons largely used his instruments and were quite satisfied. If that is so why alter them as far as the blade is concerned? If the object is to facilitate the cutting process, then the advice given in the books as to the advisability of using a blunt instrument will be defeated. The blunt guillotine as an enucleation instrument is a distinct success, though the tearing process at the finish must tend to open the vessels again. Some surgeons jam the instrument against the jaw. Advice is given to push the tonsil into the guillotine with the forefinger. This may apply to the adult, but in the mouth of a child of two years the question of room arises. If the instrument is introduced diagonally across the buccal cavity, and the tonsil as it were scraped up a few times, the guillotine will accomplish all, and more than the finger can. Again, when the tonsil is dislocated forward upon the jaw, force used will defeat the object. Steadiness is required when closing the knife, otherwise this action will push it off the tonsil. In the case of small and large flat tonsils the writer adopts a method of crushing them with his adenoid crusher, and removing any pieces with the adenoid curved scissors.

It matters little by what process the tonsils are removed—a fairly large raw surface is always left to granulate over and finally scar. Apart from hæmorrhage, it certainly is not sound surgery to leave this open sore, and the only difficulties to closing it are presence of blood and mucus, and the question of time. The closing of the opening by metal clipping the two pillars always involves the possibility of loosening, and also trouble in removal. A better plan will be found by suturing the wound from below upwards with curved long-handled needles and fine silk or thread. The

art of suturing at depth is extremely simple, rapid, and easily acquired with a little practice. The result to the patient is marked, the usual discomfort for days being almost entirely eliminated.

How to suture at depth.—With the mouth and pharynx clear of mucus and blood, the introduction of a curved needle from below upwards is an easy matter; all that is required is a little practice and the simplest of instruments—a long pair of forceps to pick up the tissues, a small curved hook to catch the suture, and a knot tightener. It is better to practise the method under somewhat similar conditions. Fix a piece of lint to the table (do not practise with the silk round a smooth surface such as a pin). Take a needle threaded with about 18 inches of silk, and having passed it through the lint tie a simple reef knot half way between the lint and fingers; next grasp one end between finger and thumb, while the other end is held loose and played out as required. The knot adjuster is introduced and kept about ½ inch away and slightly in advance of the loop, which runs easily down the other tight silk. The knot adjuster must not be placed in the angle of the knot, otherwise it will jam. One suture is sufficient for a child, but two will be required in an adult. In order not to mix the sutures it is advisable to use them of different colours and not clip them. A fine silk suture has been found most suitable.

After-treatment.

Surgeons in general emphasise the question of shock to young children consequent upon the operation, and at the same time advocate the use of ice to stop hæmorrhage at the back of the pharynx. Surely this is not correct. The act of circumcision—surely a more severe operation—is well stood without much evidence of shock. The question is really one of hæmorrhage, and the shock can be measured accordingly. Saline injection should always be ready for use. Hæmorrhage after all operations, though it is not generally admitted, is a common cause of death. How many children nearly die from this cause after this operation? The child quietly sleeping and quietly swallowing is the one nurses need to watch. The writer adopts the precaution of having the nose and mouth sprayed with a coarse spray of weak permanganate of potash every hour for 24 hours after these operations. The question of improving the physical condition in neglected children by systematic training is indeed a national one, and should receive the attention of the State. Homes for this purpose require to be established where children would be under the constant supervision of nurses proficient in the art of breathing exercises. Under such conditions and amid healthy surroundings three months should suffice to start a permanent improvement and eliminate from the community those deformed and semi-idiotic-looking children so common everywhere at the present day.

Johannesburg, S.A.

THE DEVONSHIRE HOSPITAL, BUXTON.—The annual report of this institution dealing with the year 1915 makes a special appeal for donations in aid of a debt of £11,500 contracted in consequence of extensions commenced before the war. During the year under notice 3106 in-patients were treated, of whom 2463 were discharged as improved and 9 died. The out-patients numbered 871. It is pointed out that the work during 1915 cannot be compared with that of any previous year, the conditions obtaining being quite different. Up to the end of the year 1111 soldiers had been admitted since the commencement of the war suffering from rheumatism and allied diseases, and although the total income under the heading of revenue account has been more than in previous years, it is accounted for mainly by the payments made by the War Office for soldier patients.

CHILDREN'S COUNTRY HOLIDAY FUND.—The Earl of Arran, the honorary treasurer of this fund, has issued an appeal for subscriptions, which have fallen very considerably owing to the war. One of the objects of the fund is to send ailing children from the elementary schools of London to the country for a fortnight during the summer holiday, and in this way the fund does much to promote the health of the children of the poorer classes in the metropolis. As there is a great dearth of country homes able to accommodate the children the secretary would like to be informed of villages where the children could be conveniently housed. Subscriptions and donations should be sent to 18, Buckingham-street, Strand, W.C., the offices of the fund, or to the bankers, Messrs. Barclay and Co., 1, Pall Mall East, S.W.

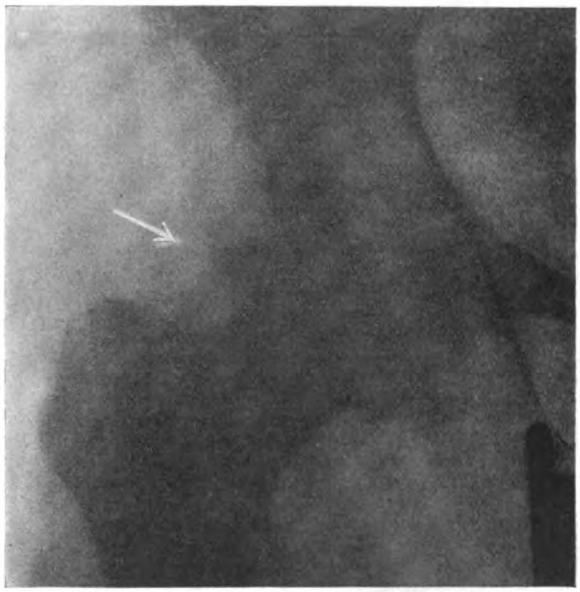
OPERATIVE TREATMENT OF OSTEO-ARTHRITIS.

BY W. I. DE C. WHEELER, F.R.C.S. IREL.,
SURGEON TO MERCER'S HOSPITAL, DUBLIN.

Two of the X ray photographs here reproduced illustrate the condition of a patient who was operated on in October, 1912, for osteo-arthritis, and demonstrate the appearance of the hip-joint three years afterwards. As this was the first case on record, so far as I know, in which a systematic operation was performed for the relief of crippling osteo-arthritis, it may be of interest to record the operative procedure and the late result.

The patient, a female aged 21 years, was the victim of poly-articular chronic rheumatoid arthritis (metastatic), from which she had suffered from childhood. The left knee-joint, the right hip-joint, and both wrists were disorganised by characteristic osteo-arthritic changes. The left knee was semi-flexed and could only be extended with great pain. The right hip could bear no weight whatever, the slightest pressure on the heel causing pain in the joint. Locomotion was only possible with the aid of crutches, but owing to the condition of the wrists movements were attended with much suffering. The patient had been dependent on the use of crutches for seven years. All forms of treatment had been tried. Massage, hot air, and vaccines had in turn been recommended without success, and alterations of the boot on the side of the flexed knee had failed to give any relief or to improve the crippled condition of the patient. X ray photographs taken by Dr. M. Hayes showed lipping of the tibia on the outer side of the left knee-joint, corresponding to a point of great tenderness, and a ring of osteo-arthritic bone was found surrounding the right femur at the junction of the head and neck. Fig. 1.) Every movement of the

FIG. 1.



Cheilotomy for crippling metastatic arthritis of the hip-joint. (First case on record.) Patient, aged 21, before operation. A ring of new bone surrounded the junction of the head and neck of the femur. Great pain accompanied any movement of the joint. Crutches were used for seven years.

joint was impeded, but more particularly in the direction of abduction.

The first operation was performed on the knee-joint in September, 1912. The lipping of the tibia was carefully removed through a well-marked line of cleavage. A weight and pulley were attached to the limb for ten days, and massage was administered for a short time subsequently. I was surprised to find that a few days after the operation the joint could be fully extended and flexed without pain. I explained to the patient the untried nature of the treatment and that operation on the hip might not be followed by a similar result. She, however, urged me to try.

A month after the first operation (October, 1912) the right hip-joint was opened through Kocher's posterior incision. There was a well-marked "cornice" of newly-formed bone, giving the head and neck the mushroom-like appearance commonly seen in the surgical museums. The capsule was freely opened, and while the hip was rotated in all directions by an assistant the new bone was chiselled away from about two-thirds of the circumference. On the following day pressure on the heel caused no pain. The stitches were removed in ten days and the patient was allowed up within a fortnight. She could by this time bear her entire weight on the limb, and the movements of the hip-joint, including abduction, were free and painless. Eight months afterwards I saw the patient in London with Mr. T. P. Strangeways, of Cambridge, who is specially interested in the subject, and she was then walking without crutches in absolute comfort.

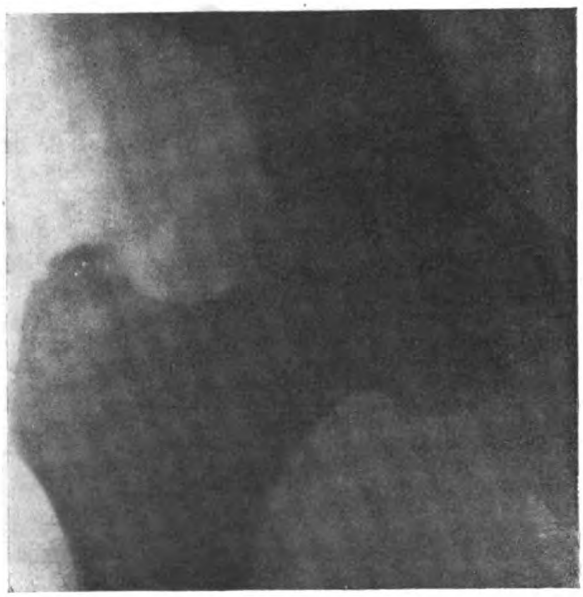
Three and a half years later Dr. A. C. Jordan, of London, kindly X rayed the hip. (Fig. 2.) It will be seen that there is no sign of recurrence of the disease, and that the profile view shows a comparatively normal joint. The patient continues to be well, and is at present engaged in munition work.

There appears to me to be three classes of cases which may receive benefit by operation.

The case described above illustrates a class where there is a line of cleavage between the old and the new bone, such as is commonly found in connexion with the head of the first metatarsal bone in cases of bunion. The removal of the osteo-arthritic lipping in such cases is easy of accomplishment and is followed by good results without a tendency to recurrence. Whether this variety is more often found in young people, as in my case, I cannot say.

The second class (Fig. 3) comprises cases seen most commonly in elderly patients, where irregular osteophytes form in connexion with the joint in such a way as to produce ossification in the fibrous layer of the capsule. The fibrous layer of the capsule is a continuation of the fibrous layer of

FIG. 2.



Same patient as Fig. 1. Three years after operation. The patient fourteen days after operation was walking with no pain and without crutches. Full movements were restored to the joints. There is no sign of recurrence.

the periosteum, and it is in this, as J. B. Murphy points out, that a marked tendency to ossification exists. In such cases there is no attempt at a line of cleavage, and the removal of the osteophytes leaves behind large areas of raw bone. An operation for the removal of such osteophytes may be followed by recurrence or ankylosis. In a suitable case belonging to this class the complete operation of arthroplasty as advocated by Murphy is probably the best procedure. It must be remembered, however, that if pain is the chief indication for operation ankylosis of the joint in a good position is not undesirable, since the pain at once disappears.

In the third class of cases the "rheumatoid" arthritis causes destruction of the joints without osteophytic outgrowths. This is often a painful and crippling form, especially when it involves the hands and feet. It is common in young people, and, like all other forms of the disease, is probably metastatic. Much can be done, no doubt, for these cases by the administration of vaccines if the focus

FIG. 3.



Cheilotomy. Patient aged 60, a recent case. Osteophytes in elderly people have usually no line of cleavage. Removal from the fixed acetabulum is more difficult than from the femur, which can be rotated during operation.

can be found, but if the cases are "cryptogenetic," attention should be directed to the condition of the large intestine.

In alluding to the rôle of the colon in such cases I am conscious that I am treading on very controversial ground, but I have been struck by two recent patients in my own practice who were relieved in a striking manner by a partial colectomy. X ray photographs had shown marked enteroptosis and stasis in the colon. A few days after operation the patients, in an unmistakable manner, described the disappearance of the pain from their joints, and subsequently demonstrated the restoration of movements and function which before operation appeared irretrievably lost. There is much room for investigation in relation to the effect of colectomy on certain cases of crippling rheumatoid arthritis, and the subject deserves, in my opinion, serious attention.

In conclusion I must acknowledge the contributions of Mr. Sampson Handley to the literature on this subject. He is responsible for the term "cheilotomy" as applied to the removal of lips of osteo-arthritic bone; and although so far as I can ascertain no operation of cheilotomy was performed prior to the case I have recorded in this paper, Mr. Sampson Handley was the first to publish his operative results, and thus to bring the subject prominently before the profession.

Dublin.

MEDICAL MAGISTRATE.—Dr. A. E. Larking has been appointed a justice of the peace for the borough of Buckingham.

DEATHS IN THE DENTAL PROFESSION IN THE WEST OF ENGLAND.—Two well-known members of the dental profession have recently passed away, Mr. T. Taylor Genge, L.D.S. Irel., aged 59 years, of Clifton, who had been for 26 years honorary dental surgeon to the Bristol General Hospital, and Mr. J. T. Browne-Mason, L.D.S. Eng., who had practised his profession in Exeter for 40 years. He was honorary consulting surgeon to the Exeter Dental Hospital. His son, Lieutenant-Colonel H. O. B. Browne-Mason, R.A.M.C., was made prisoner at the fall of Kut.

ON THE AGGLUTINATION REACTION OF THE BACILLI OF THE TYPHOID-DYSENTERY GROUP WITH NORMAL SERA.*

BY T. R. RITCHIE, M.B., CH.B. N.Z.,
CAPTAIN, NEW ZEALAND ARMY MEDICAL CORPS.

(Report to the Medical Research Committee.)

AN agglutination test carried out with the serum of a patient may be used either to diagnose an infection during the acute stage of the disease or, in the stage of convalescence or recovery, to decide with a considerable degree of accuracy the specific nature of the infection from which recovery has taken place. In this latter instance the agglutination test is often the only means of specific diagnosis at our disposal, as the virus may be no longer present, or the search for it may be so difficult as to make the chances of success negligible. As a biological reaction its value is relative; the figures obtained by testing a series of sera which are suspected of being pathological are only of value when those figures are compared with the results obtained with a series of presumably normal sera, the same technique being employed in each series. This simple and obvious condition has, however, been too often disregarded.

A correct appreciation of the actual facts regarding "normal" agglutination of the organisms of this group is a very pressing matter, particularly in view of the many investigations of "enteritis" cases now in progress.

Having been working on such cases on behalf of the Medical Research Committee at the Bacteriological Laboratory of the London Hospital, in association with Dr. Rajchman and Dr. Western, I undertook the examination of a series of "normals," so as to determine the "normal" mean agglutination for the bacilli in question when examined with the technique which is being employed in this laboratory. In the initial stages of this investigation samples of blood were collected from medical students, laboratory workers, and hospital patients. We were, however, soon forced to the conclusion that such individuals could not be taken as representing the "normal" population. In an endemic area an individual, however normal his history, may react to the specific virus more readily than would be the case with a person in an area free from infection. Persons in the immediate environment of active cases of disease cannot be taken as "normals" who have not encountered any specific virus. Individuals inoculated with a specific antigen cannot be regarded as "normals" to that virus. In order to eliminate as far as possible these fallacies, Dr. W. M. Fletcher very kindly arranged for us to obtain a series of 800 "normals" at Cambridge. The local organisation was carried out by Professor J. S. Gardiner and Mr. T. P. Strangeways, for whose kindness and help we wish to express our thanks. We would also avail ourselves of this opportunity to express our thanks to all those who so willingly submitted to be tested as "normals."

The following table shows the sources from which samples of blood were obtained:—

Males.	
Cambridge Undergraduates	294
Cambridge Scientific Instrument Company ...	108
Cambridge University Press; and Union Press	48
Leys and Perse Schools	33
Cambridgeshire Regiment...	28
Various sources	24—535
Females.	
Newnham and Girton Colleges	251
Various sources	6—257
Total number of persons...	792

None of the 792 persons, as far as they were aware, had suffered from an infection by any of the organisms against which the sera were being tested. Foreigners, and all who had been inoculated, were excluded.

When in the course of the investigation it was found that a serum gave a positive reaction in a higher dilution than 1 in 16 for B. typhosus, B. paratyphosus A and B, 1 in 32 for B. dysenteriæ (Shiga), or 1 in 128 for B. dysenteriæ (Flexner), further inquiries were made on the following lines: (*a*) History of acute enteritis, (*b*) history of "food poisoning," (*c*) employment at any time in a bacteriological laboratory, (*d*) contact with cases or epidemics of "enteritis," (*e*) residence in a thickly populated area or abroad, and (*f*) work in asylums. Only in a small percentage of cases did these inquiries elicit information pointing to a possible explanation of the positive result obtained. These are noted later under their respective headings.

The results obtained from the examination of the blood of medical students and laboratory workers and those obtained from hospital patients are given in separate tables. The percentage of positive results is much higher in some cases in these two classes, a result, as suggested above, due to their greater exposure to infection, and also, in the case of hospital patients, to their living in a thickly populated district, and possibly to the inclusion of many who have suffered from one or other of these diseases, but from whom definite information could not always be obtained.

Age is perhaps an important factor in such an investigation as this, as the percentage of positive results obtained may to some extent be influenced thereby. As this investigation was undertaken primarily to give a "normal" standard for comparison with results obtained from cases of sickness amongst the soldiers in the Mediterranean Expeditionary Force, "normal" persons of approximately the same age were selected. None of the cases examined were under 17, and very few under 20 years of age. Of the females none were over 30, and of the males only 10 per cent. were above that age. The vast majority were between the ages of 20 and 25.

Technique.

Before detailing the results of the serological investigations which we have carried out it will be necessary to describe the technique employed.

In deciding which method we should adopt for carrying out the agglutination reactions we aimed at obtaining a technique which would combine accuracy with simplicity, and would give a good end point in reading off, and also a technique by which the large number of cases at our disposal could be adequately dealt with without delay and with limited assistance. With these ends in view we have adopted, in principle, the method described by Max Neisser. This consists in the use of series of glass cells ground flat top and bottom so that they may be piled up on top of each other. In the place of graduated pipettes, as used by Neisser, we have employed the principle of the drop method as described by Donald.[1] In an actual test our procedure is as follows:—

A series of glass cells is laid out, the number varying according to the limit of dilution it is desired to reach. A capillary pipette is then taken and cut off at a suitable gauge (we have found No. 53 Stubbs steel wire gauge to be a convenient size). With this a 1 in 8 dilution of the serum in saline is then made. With a similar standardised pipette one drop of saline is placed in each of the series of glass cells. One drop of the 1 in 8 serum is then added to the first cell and mixed so as to make two drops of a 1 in 16 dilution. One drop of this is then added to the second cell, making two drops of a 1 in 32 dilution. This proceeding is carried out until the last cell of the series, one drop from the last cell being thrown away. We now have a series of serum dilutions 1 in 16, 1 in 32, &c., each of equal and standard volume, ready to receive the emulsion.

The emulsions we have used have been living suspensions obtained by washing off with normal saline 24 hours' growth of the bacillus required from agar slope cultures. In the case of B. dysenteriæ Flexner and B. paratyphosus B a few revolutions in the centrifuge is advisable to remove clumps. During the period in which we have been carrying out large numbers of tests daily we have found no difficulty in obtaining uniformly satisfactory emulsions by this method. With a pipette, standardised as above, one drop of emulsion is added to each dilution of serum, so that we now have a series of dilutions of 1 in 32, 1 in 64, &c. The cells are now piled up, the top one being covered with a flat glass which

* This work has been carried out in the Bacteriological Department of the London Hospital, in association with Dr. L. Rajchman and Dr. G. T. Western, in connexion with an investigation into cases of enteritis from the Mediterranean war area.

[1] A Method of Drop-measuring Liquids and Suspensions, THE LANCET, Dec. 4th, 1915, p. 1243.

carries any necessary labelling. The pile is placed in the air incubator at 37° C. for a period of two hours. Controls for each bacillus are put up at the same time. The results are then read off by placing each cell in turn on the stage of a microscope and examining with a two-thirds inch objective. By this method we have obtained results which appear to have great uniformity; the end point is marked and easy to read off, and we have found it possible to test as many as 130 sera to five different organisms in a single day in which about five hours were devoted to this work. The only special apparatus required for carrying out this method on a large scale is a sufficient number of the glass cells.

B. Typhosus.

None of the cases examined had been inoculated with this organism.

TABLE I.—*Showing Results obtained from the Examination of the Blood of 789 Normal Persons, excluding Medical Students, Laboratory Workers, and Hospital Patients.*

—	− in 1-16.	+ in 1-16.	+ in 1-32.	+ in 1-64.	Total.
Females ...	229 = 89·45%	22 = 8·59%	5 = 1·95%	—	256
Males... ...	504 = 94·56%	26 = 4·87%	2 = 0·18%	1	533
Total ...	733 = 92·9 %	48 = 6·08%	7 = 0·88%	1 = 0·12%	789

From the above table it will be seen that out of the total of 789 cases examined, 56, or 7·09 per cent., gave a positive result.[2] But of these, 48 only give a positive result in a dilution of 1 in 16, and of these only 17, or 2 per cent., give complete agglutination in that dilution. Of the 7 giving a positive result in dilution 1 in 32, 5 were incomplete, and inquiries made on the lines already indicated elicited the following information concerning the other 2. One was confined to bed for a fortnight in 1911 suffering from "gastric catarrh," and the other, "about the age of 13 (seven years ago), was much in contact with a maid who a few months previously had had a severe attack of typhoid." No explanation of the case giving a positive reaction in dilution 1 in 64 could be obtained. From the above figures the following conclusions may be drawn. 1. As only 25 cases, or 3·1 per cent. of the total examined, gave a complete agglutination in dilution 1–16, a complete positive result in this dilution should be looked upon with suspicion. 2. As only 8, or 1 per cent. of the total examined, gave any reaction in a dilution 1–32, complete agglutination in this dilution, when the investigation is carried out according to the technique described, should be looked upon as diagnostic. The difference between the sexes, as shown by the above table, is discussed later.

TABLE II.—*Showing Results obtained from Examination of 50 Hospital Patients.*

− in 1-16.	+ in 1-16.	+ in 1-32.
37 = 74%	11 = 22%	2 = 4%

TABLE III.—*Showing Results obtained from Examination of 57 Medical Students and Laboratory Workers.*

− in 1-16.	+ in 1-16.	+ in 1-32.	+ in 1-64.
43 = 75·4%	6 = 10·5%	4 = 7%	4 = 7%

B. Paratyphosus A.

The results obtained with this organism were even more definite than those for the B. typhosus. Of the 792 cases examined only one gave a positive result in a higher dilution than 1 in 16, and in this case there was a history of an attack of "food poisoning" 18 months previously. In view of the fact that mild cases of typhoid and paratyphoid fever are frequently not diagnosed as such, it is not perhaps improbable that this man had had an attack of paratyphoid fever at that time.

[2] It may perhaps be as well to point out that the word "positive" may be used in two different senses—(*a*) the biological, and (*b*) the clinical sense. In these tables the phrase "positive result" is used purely in the biological sense—i.e., in the given dilutions more or less agglutination occurred.

TABLE IV.—*Showing Results obtained from the Examination of the Blood of 792 Normal Persons, excluding Hospital Patients, Medical Students, and Laboratory Workers.*

—	− in 1-16.	+ in 1-16.	+ in 1-32.	+ in 1-64.	Total.
Females ...	245 = 95·33%	12 = 4·66%	—	—	257
Males ...	525 = 98·13%	9 = 1·68%	—	1 = 0·18%	535
Total ...	770 = 97·2%	21 = 2·63%	—	1 = 0·12%	792

Of the 21 cases giving a positive result in dilution 1–16, 10 were incomplete. There were therefore only 12 out of the 792 cases, or 1·5 per cent., which gave a complete agglutination in this dilution. Conclusions:—1. Complete agglutination in dilution 1–16 should be looked upon with suspicion. 2. Complete agglutination in a higher dilution is practically diagnostic.

TABLE V.—*Showing Results obtained from Examination of the Blood of 59 Hospital Patients.*

− in 1-16.	+ in 1-16.	+ in 1-32.	+ in 1-64.	Total.
53 = 89·8%	2 = 3·38%	2 = 3·38%	2 = 3·38%	59

TABLE VI.—*Showing Results obtained from Examination of 63 Medical Students and Laboratory Workers.*

− in 1-16.	+ in 1-16.	+ in 1-32.	+ in 1-64.	Total.
60 = 95·2%	3 = 4·7%	—	—	63

B. Paratyphosus B.

Here the results obtained were the most definite in the whole investigation.

TABLE VII.—*Showing Result of Examination of the Blood of 792 Normal Persons.*

—	− in 1-16.	+ in 1-16.	+ in 1-32.	+ in 1-64.	Total.
Females ...	246=95·71%	11=4·28%	—	—	257
Males ...	513=95·88%	22=4·11%	—	—	535
Total ...	759=95·83%	33=4·16%	—	—	792

Of the 33 cases showing a positive result in dilution 1–16, only 9, or 1·1 per cent., gave complete agglutination. Conclusions: 1. Complete agglutination in dilution 1–16 is extremely suspicious. 2. Complete agglutination in a higher dilution is practically diagnostic.

TABLE VIII.—*Showing Results obtained from 59 Hospital Patients.*

− in 1-16.	+ in 1-16.	+ in 1-32.	+ in 1-64.
53	5	—	1

TABLE IX.—*Showing Results obtained from 63 Medical Students and Laboratory Workers.*

− in 1-16.	+ in 1-16.
58 = 92%	5 = 7·9 %

So far, the results of our investigation have been fairly satisfactory, in that they have shown that normal serum does not agglutinate the various organisms already dealt with except in low dilutions, and even then only in a small percentage of cases. But when we come to study the results obtained in connexion with the dysentery group of bacilli, the dividing line between "normal" and "abnormal" sera is not so definite. Normal serum agglutinates the dysentery bacilli in much higher dilutions than in the case of the typhoid and paratyphoid group. Thus the interpretation to be placed on results obtained from doubtful cases of dysentery is rendered uncertain unless the result is positive in a fairly high dilution.

B. Dysenteriæ (Shiga).

TABLE X.—*Showing Results obtained from Examination of the Blood of 792 Normal Persons.*

—	— in 1-16.	+ in 1-16.	+ in 1-32.	+ in 1-64.	+ in 1-128.	Total.
Females	59=22·9%	65=25·29%	116=45·1%	15=5·8%	2=0·77%	257
Males...	194=36·26%	194=36·26%	127=23·73%	13=2·4%	7=1·3%	535
Total...	253=31·9%	259=32·7%	243=30·68%	28=3·5%	9=1·13%	792

From the above table it will be seen that 4·6 per cent. give a positive reaction in dilution 1–64, and 1·13 per cent. a positive reaction in dilution 1–128. Of the 28 giving a positive result in 1–64 only 6 were complete. Of these 6, 1 had travelled extensively on the continent, and 1, a builder, had worked for some time in an asylum. Conclusion :—Complete agglutination in a dilution 1–64 and above should be regarded as diagnostic.

TABLE XI.—*Hospital Patients.*

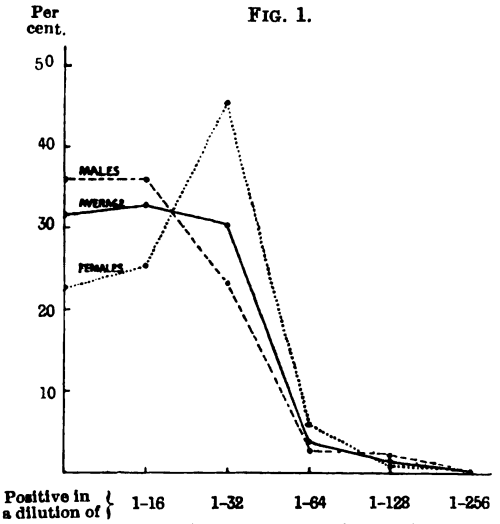
– in 1-16	+ in 1-16.	+ in 1-32.	+ in 1-64.	+ in 1-128.	Total.
17	16	17	6	1	57

TABLE XII.—*Medical Students and Laboratory Workers.*

– in 1-16.	+ in 1-16.	+ in 1-32.	+ in 1-64.	Total.
12	27	18	3	60

The results given above, excluding hospital patients, medical students, and laboratory workers, are graphically represented in the appended chart. (See Fig. 1.)

FIG. 1.



Agglutination reaction of normal serum with the Shiga bacillus.

B. Dysenteriæ (Flexner).

As it was found that the majority of samples of normal blood agglutinated this bacillus in a dilution of 1–64, this was taken as the lowest dilution for our investigation.

TABLE XIII.—*Showing Results of Examination of Blood of 792 Normal Persons.*

—	– in 1-64.	+ in 1-64.	+ in 1-128.	+ in 1-256.	+ in 1-512.	Total.
Females	42=16·34%	84=32·68%	120=46·69%	7=2·72%	4=1·56%	257
Males...	170=31·77%	243=45·42%	119=22·24%	2=0·37%	1=0·18%	535
Total...	212=26·76%	327=41·28%	239=30·17%	9=1·13%	5=0·65%	792

Of the 14 shown above as giving a positive result in a higher dilution than 1–128, it will be noticed that 11 are females. Six of the 14 gave incomplete results in dilution 1–256.

TABLE XIV.—*Hospital Patients.*

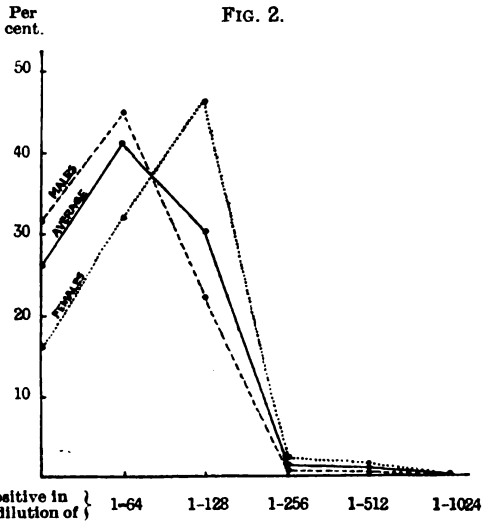
– in 1-64.	+ in 1-64.	+ in 1-128.	+ in 1-256.	Total.
17	19	22	—	58

TABLE XV.—*Medical Students and Laboratory Workers.*

– in 1-64.	+ in 1-64.	+ in 1-128.	+ in 1-256.	+ in 1-512.	+ in 1-1024.	Total.
15	14	23	3	1	2	58

The 6 giving a positive result in dilutions 1–256 or over are all workers in bacteriological laboratories where investigations are being carried out on cases of dysentery, except one man, a medical student, who cannot account for his blood agglutinating the Flexner bacillus in dilution 1–1024. The other case where a positive result was obtained in dilution 1–1024 is interesting. This woman,

FIG. 2.



Agglutination reaction of normal serum with the Flexner bacillus.

a worker in the bacteriological laboratory, was absent from work for two days owing to an attack of diarrhœa, but was able to resume work on the third day. Her blood was examined two days after her return, when it was found to agglutinate the Flexner bacillus as shown above. The woman working with her is the one shown as positive in a dilution of 1–512. Both had probably been infected with the Flexner bacillus ; yet in one case it passed unnoticed, and in the other resulted in only two days' absence from work. It is therefore quite possible that many mild attacks of dysentery due to this bacillus pass unrecognised.

Conclusions to be drawn from Tables XIII., XIV., and XV.—In the case of the Flexner bacillus, complete agglutination in a dilution above 1–128 should be looked upon as diagnostic, but in a dilution of 1–128 or lower cannot be relied upon for diagnostic purposes.

Influence of Sex.

One interesting result of this investigation has been the uniformly higher percentage of positive results obtained from the females than from the males, as shown by the following figures :—

Percentage of Positive Results obtained in a Dilution of 1-16.

	Females.	Males.
B. Typhosus	10·54 per cent.	..... 5·44 per cent.
B. Paratyphosus A ...	4·66 ,,	..... 1·86 ,,
B. Paratyphosus B ...	4·28 ,,	..... 4·1 ,,

The differences in the case of B. dysenteriæ (Shiga and Flexner) are shown in the curves given under their respective headings.

There is, of course, the possibility of a certain amount of error in calculating differences between the sexes, when the results obtained from 256 females are compared with those obtained from 533 males. But Dr. John Brownlee, of the

Statistical Department of the Medical Research Committee, has calculated that with these figures the probability of error is about 1 in 50.

The above figures are interesting when compared with the statistics for the various infectious diseases, as given in the Registrar-General's report and in the statistical records of various epidemics in Great Britain. In practically every case the number of males affected exceeds that of females, and the percentage death-rate is higher in the case of males. The above figures therefore seem to point to the same conclusion as may be drawn from statistics of infectious diseases, &c.—namely, that females possess greater resisting powers to disease than males.

Summary of Conclusions drawn from the Foregoing Investigation.

1. *B. Typhosus.*—(*a*) Complete agglutination in a dilution of 1–16 should be looked upon with considerable suspicion. (*b*) Complete agglutination in a higher dilution (1–32 or above) should be looked upon as diagnostic.

B. Paratyphosus A and B.—Complete agglutination in a dilution 1–16 is suspicious, and in 1–32 or higher may be looked upon as diagnostic.

B. Dysenteriæ (Shiga).—Complete agglutination in a dilution of 1–64 and above should be regarded as diagnostic.

B. Dysenteriæ (Flexner).—Complete agglutination in a higher dilution than 1–128 should be looked upon as diagnostic, but in a dilution of 1–128 or lower it cannot be relied upon for diagnostic purposes.

2. In the case of medical students, laboratory workers, and the hospital class of the population, the tables given show that a larger percentage respond to the test in higher dilutions than do "normal" members of the population. This must be taken into consideration in applying the above conclusions.

THE CAUSATION AND CURE OF CERTAIN LUNACIES.

BY RUPERT FARRANT, F.R.C.S. ENG.,

CAPTAIN, R.A.M.C.; LATE HUNTERIAN PROFESSOR, ROYAL COLLEGE OF SURGEONS OF ENGLAND; SURGICAL REGISTRAR TO WESTMINSTER HOSPITAL.

BEFORE going on foreign service for a second year, I wish to publish the following preliminary conclusions and summary of work carried on during the last seven years directed to the causation and cure of lunacy. The work is a continuation of that previously published on the thyroid gland in the elucidation of goitre and exophthalmic goitre.[1]

The work consists of the microscopical examination of sections taken from the pineal, pituitary, thyroid, and sexual glands, firstly at different ages and periods of life such as puberty, menopause, and childbirth; secondly, the effect induced in these glands by the acute and chronic toxæmias; and, thirdly, the changes found in cases of lunacy.

Clinical examinations were carried out of cases exhibiting signs of enlargement or atrophy of these glands and symptoms of excess or diminution of secretion. Similar examinations have been made on all classes of lunacy for the presence of signs and symptoms. Photographs and X ray examinations have been made to illustrate their occurrence.

Mental cases and others have been examined for the presence of toxæmias inducing the alteration in the glands and the consequent induction of symptoms of excess and deficiency.

Bacteriological examinations have been made of the fæces of lunatics and the colons examined post mortem.

From some 3000 sections it is found that these glands vary at different ages and periods of life; with advance of life they tend to atrophy.

It is found that the pineal reacts to certain toxæmias, the ultimate result of which is fibrosis.

The pituitary reacts in a similar manner, the terminal result of which is fibrosis, intermediate stages of hyperactivity are seen and the formation of cysts and adenomata.

The reaction of the thyroid to certain toxæmias with the induction of hypertrophy, cysts, and adenomata I have already described in my lectures as Hunterian professor in 1915. A comparison was made of such specimens with those obtained from cases of lunacy (apart from those in which a definite pathology has already been proved, such as general paralysis of the insane (other syphilis cases), meningitis, head injuries, &c.). The effect of age and of the lethal toxæmias was discounted, and the state of the glands in cases of lunacy determined.

In primary and secondary amentia atrophy of the pineal, pituitary, and thyroid were found in three main groups of cases.

In dementia præcox an alteration was found in the glands which varied with the duration of the case. Alteration and degeneration were also found in other cases of dementia. In some cases of acute confusional mania, melancholia, manico-depressive and other forms of insanity changes were found in the thyroid, pituitary, and sexual glands. The changes varied from hypertrophy to atrophy.

Clinical examinations were made of some 1000 cases of insanity, analogous to those from which the pathological sections had been prepared, for signs of enlargement or atrophy and the presence of excess or deficiency of secretion from these glands.

The thyroid gland was frequently found to be abnormal in children, adolescents, and adult lunatics; its size varied from complete atrophy and the general condition from one of hyperthyroidism and exophthalmic goitre to myxœdema and cretinism.

The pituitary gland was found sometimes to have given rise to symptoms of hyperpituitarism, to apituitarism in idiocy, dementia præcox, and other forms of insanity. Enlargement and atrophy of the pituitary were deduced from X ray photographs of the sella turcica and clinoid processes. Signs of alteration in the pineal were found especially in children and adolescents with consequent symptoms of hyper- and a-pinealism.

Sexual glands.—Alteration was found in the size of the testicles associated with ductless gland changes. Testicular atrophy was well seen in cases of apituitarism. From the histories of cases it was deduced that the stimulation of the sexual organs and its sudden cessation was associated with altered mentality varying from mania to exhaustion psychosis; altered mentality was also found in cases of double castration. Hypertrophy of the prostate was often found to be associated with altered mentality, and after complete removal cases were frequently associated with depression or melancholia.

Some 200 cases were examined for obvious signs of chronic toxæmia. Pyorrhœa and carious teeth were found to be a frequent accompaniment of lunacy in adults; in certain cases signs of chronic intestinal stasis and toxæmia were well marked.

Bacteriological examination of the fæces were made in some 100 cases for simple aerobic infections (apart from cases of asylum dysentery).

Streptococci were found up to 100 per cent. and the total exclusion of bacillus coli in some cases of mania. Streptococci were also found from vaginal swabs of puerperal mania.

Colons have been examined post mortem and found to exhibit changes varying from normal to cases with pericolitis, fibrous thickening of the walls of the gut, and atrophy of the mucous membrane, and other cases with dysenteric ulceration.

It is deduced that many cases of lunacy may be classified according to the toxæmia present and the change that it has induced in the ductless glands.

The effect of the toxæmia varies with the intensity, duration, and the age of the patient; the first effect is stimulation, the final, fibrosis. In the fœtus and in childhood an acute or chronic toxæmia may induce atrophy of a ductless gland and consequent maldevelopment and idiocy. Three groups stand out when the pituitary, pineal, or thyroid is atrophied. Cases of dementia præcox exhibit a polyglandular syndrome and different gland types are to be found, and the appearances of the cases vary whether the gland is hypertrophic or atrophic.

In adults certain toxæmias react on these glands, especially the thyroid and pituitary and induce stimulation, hypertrophy, and finally atrophy. The alteration in the amount of secretion, whether excess, deficiency, or absence, induces an altered mental state, and this, combined with the effect of the toxæmia, renders the patient insane or liable to insanity from slight mental stress. Alteration in the sexual glands,

[1] THE LANCET, March 7th, 1914, p. 680.

whether primary or secondary, leads to altered mentality up to insanity.

The lines on which beneficial treatment may be carried out, based on the above pathology, become obvious; it may be summed up by saying that toxæmias, if present, should be removed by medicinal or surgical measures and the glands allowed to involute if they are hypertrophied, or if they are degenerated with deficient secretions these secretions should be supplied. Good results may be expected before cortical brain lesions have taken place.

Careful experimental treatment with control cases is at present being carried out for me at Bethlem Royal Hospital by Dr. J. G. P. Phillips, commencing with the simpler medicinal treatment.

In a work of this nature due credit must be given to those who have so kindly given me pathological material and access to clinical cases. Full acknowledgment will be made when the work is published in detail. Dr. Braxton Hicks has supervised the collection of pathological material during the last year.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

NOTES ON THREE INTERESTING GUNSHOT WOUNDS.

BY PERCY C. WOOLLATT, F.R.C.S. EDIN.,

ASSISTANT MEDICAL SUPERINTENDENT I.E.T.D., LATE MEDICAL OFFICER H.B.M.'S CONSULATE, ALSO CHIEF OF MEDICAL DEPARTMENT, 3RD REGIMENT, PERSIAN IMPERIAL GENDARMERIE, SHIRAZ, PERSIA.

DURING some years' residence in Persia an enormous number of gunshot and other wounds fell to my lot for treatment. I have selected the three following as being uncommon and interesting.

CASE 1. *Gunshot wound of heart; recovery.*—A gendarme was contemplating the purchase of a revolver, and at the moment the seller was handing it to him it accidentally discharged at a distance of about 2 feet. The bullet was leaden and 9 mm. bore, and penetrated the sternum. On my arrival at the hospital the patient had extreme pallor and very rapid pulse and urgent dyspnœa. I was horrified to see that an assistant had cleaned up and passed a probe, the handle of which was moving with a circular motion. I requested him to leave the probe where it was and rapidly cleaned up. On taking the probe I noticed that it was "gripped" by the heart and that the circular movement was due to the heart's action. The bullet was not felt, and probing further being out of the question I slowly withdrew the probe, which I found had passed in 2½ inches. A brisk hæmorrhage followed, which in a minute or so ceased spontaneously. The aperture of the wound was half an inch above the xiphisternum and inclined to the left from the middle line. The bullet apparently struck at an angle of about 40 degrees. On auscultation a tumultuously beating heart was audible, also a "mill-sound"—i.e., air in the sac of the pericardium. In the lung nothing abnormal was noted; there were no signs of injury of the pleura. A hypodermic injection of morphia was given and a dry dressing applied; no drain. I decided to watch and wait. On the following day respiration and pulse were much improved. An improvement was noted on the second day, the temperature being normal. On the third day a pericardial rub was audible; the pulse and respiration were practically normal, while the temperature was normal. The patient made an uneventful recovery, the pericardial rub was inaudible after the eighteenth day, and he was back on duty within six weeks. He never exhibited any signs of thrombi.

On the day of the accident owing to the patient's collapsed condition and to the fact that he was not appreciably worse than at the time of his admission, some 20 minutes before, I decided not to operate unless absolutely necessary, feeling pretty certain that during the next few days, if he survived, I should be compelled to do so on account of some infection. The hospital did not possess an X ray apparatus, therefore the position of the bullet could not be determined. The right ventricle was wounded, but as this structure in thickness is normally less than half the diameter of the bullet it must have been injured where the septum joins it and stopped in the heart's apex. On the other hand, we must assume that the bullet traversed both the ventricles near the apex and came to rest between the pericardium and pleura. I think the latter the more probable of the two.

CASE 2. *Gunshot wound of the chest by large leaden ball; recovery.*—A muleteer was shot by a thief who apparently stood on an eminence. The wound was some five days old, as the patient was about 50 miles away at the time. The missile was a leaden ball which had been fired from an obsolete 12-bore muzzle loader. The left clavicle had been comminuted at about the junction of its inner and middle thirds. There was some cough but no sanguineous expectoration. A rounded tumour was easily discerned in the tenth interspace in the scapular line on the same side. The patient was anæmic, due to primary hæmorrhage. Auscultation of the chest elicited nothing abnormal. The wound over the clavicle was healing by first intention and was closed, but, of course, the clavicle needed treatment by Sayre's method. The tumour was incised and the leaden ball removed. The patient made an uninterrupted recovery, and excepting a little shortening of the clavicle was none the worse for his injury.

This case is interesting as a large leaden ball traversed the chest perforating both pleuræ and no infection resulted.

CASE 3. *Gunshot wound of head; infection; recovery.*—A thief was shot by a soldier some days' journey out of town. He was treated by a native surgeon and brought into hospital. There was a wound of entry, apparently caused by a 7 mm. Mauser bullet, situated 1 inch to the left of the inion; there was no exit wound. The Persian surgeon had accompanied the patient and informed me that he had probed the wound every day, so I expected to find it infected, which it was, but only of a mild nature, apparently limited to the lower half of the track. A probe passed 2½ inches, and by its direction I located the bullet in the cortex of the frontal lobe about 1 inch anterior and to the left of the mid-sagittal point. The man was well over 1000 yards away from the soldiers when shot, it being a "chance" shot, hence the bullet's non-emergence. The wound was dressed daily and there was no indication for surgical interference. With the exception of occasional headaches, which yielded readily to the influence of bromide of potassium and disappeared entirely at the expiration of a month, the patient made an uninterrupted recovery. When I saw him four years afterwards he said he felt nothing wrong.

Royal Naval Hospital, Haslar, Gosport.

A CASE OF ŒDEMATOUS LARYNGITIS.

BY ARCHIBALD KIDD, M.R.C.S., L.R.C.P. LOND., D.P.H.,

ASSISTANT MEDICAL OFFICER, PORT OF LONDON SANITARY AUTHORITY.

THE following case appears to me to be worth recording.

At 2 A.M. on May 21st I received an urgent message that a man on board a ship lying in the river had been taken suddenly ill and was apparently dying. On boarding the ship ten minutes later I found that the man was already dead. In reply to inquiries I was informed that he was a fireman, aged 22 years, who had joined the ship about a fortnight previously, and was apparently in perfect health. When he came off watch at midnight he was in his usual health and laughing and joking. At 12.45 he complained of being unable to get his breath and was apparently suffocating. It was supposed by his mates that a piece of food had stuck in his throat, and with a view to dislodging this he was inverted and attempts were made to clear his throat. For a few minutes he appeared to get better, but he then rapidly became worse and died at 1.30.

A post-mortem examination showed the body to be that of a well-developed young man presenting the usual signs of death from asphyxia. At the tip of the epiglottis was a small scar, and at the base and on the mucous membrane of the larynx immediately adjoining was a small ulcer. The epiglottis itself and the aryepiglottidean folds were swollen and œdematous and almost meeting in the middle line.

The interest of the case, I think, lies in the extreme suddenness of the onset and the rapidity with which death supervened. I was unable to obtain any history in regard to the scar on the epiglottis, and though fresh ulceration was present the man had made no complaint of sore-throat, and, as already mentioned, the onset of symptoms was so sudden as to lead his mates to suppose a piece of food had stuck in his throat.

Œdematous laryngitis is recognised as sometimes occurring in chronic diseases of the larynx, such as syphilis or tubercle, but I have been unable to find any record of a case in an apparently healthy young man in which death took place in less than an hour and in which the first symptom was urgent dyspnœa.

Gravesend.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF OPHTHALMOLOGY.

Exhibition of Cases and Apparatus.—Pituitary Tumour.

THE ordinary meeting of the section was held on June 14th, Mr. PRIESTLEY SMITH, the President, being in the chair.

Mr. G. H. POOLEY sent the further notes of a case of Mikulicz's Disease previously shown. A growth had been removed from the left orbit with some difficulty. Vision in that eye steadily improved for some time, but recently there were signs of return of the disease on the same side, though the scar was free from invasion. The removed material showed the appearances of small round-celled sarcoma.

Dr. F. R. YELLAND showed a patient with Loss of Visual Orientation, following a wound four months previously. Soon after being put to bed he had a genuine epileptic seizure and was inaccessible for 14 hours. He afterwards presented right hemiplegia, which cleared up later, but he had erroneous visual projection. The condition was now improving.—Mr. LESLIE PATON, discussing the foregoing case, drew attention to a similar case under the care of Captain S. Smith and Colonel Gordon Holmes.[1] He narrated the results of the tests he had carried out with the present patient. He had satisfied himself that the faulty projection was not due to defective eye movements. He believed that there had been complete destruction of the right occipital cortex, the left visual sensory cortex having escaped very well. There seemed to have been a complete severance of the superior longitudinal commissural fibres.

Captain J. F. CARRUTHERS exhibited a case of Retinitis Pigmentosa of unusual character in a young man who had been a soldier only three months. There was no family consanguinity, but a younger brother and an older sister suffered from night-blindness, and when dusk came on this patient could not see to drive, and declared sick, so that he had the same condition.—The case was discussed by Mr. W. LANG, Mr. STEPHEN MAYOU, Mr. J. B. LAWFORD, the PRESIDENT, and Mr. PATON.

Captain A. C. HUDSON exhibited, in a tentative form, a Giant Perimeter, and invited suggestions for improvement.—Lieutenant-Colonel R. H. ELLIOT gave his experiences with a giant perimeter which he had had made, and suggested possible improvements in the one now submitted.

Dr. A. S. COBBLEDICK read a paper on four cases of Pituitary Tumour. The cases were all in women, and three were over 60 years of age. The first case showed a contraction of the visual field of 10 to 20 degrees, and a scotoma for colour upwards and outwards from the central fixation point. The colour scotoma bothered her a great deal when reading, and people's faces appeared bluish. There was particular contraction in the temporal half of the field. Later she had Cheyne-Stokes breathing, very violent headache, and became drowsy. The pupils, however, were equal in reaction, and there was no papillitis. Urine was normal. Post mortem, a pituitary tumour the size of a walnut was found, and Dr. Buzzard regarded it as a cyst. There seemed to have been sufficient normal gland substance left to ensure normal metabolism during the six years the symptoms lasted. The second case had right homonymous hemianopia and myxœdema. The memory had become bad and the speech slurred and indistinct. The family and previous personal histories were good. She had well-marked myxœdema, and there was a lesion of the left optic tract, probably due to pituitary growth. Thyroid extract was given, and there was improvement in the memory and in some numbness which had been present. The appearance of the discs and the constitution of the urine were normal. There was little material change in the patient's condition for three years, but after that there was a fairly rapid deterioration of vision and the nervous condition increased; there were also vertigo and flickerings in front of the eyes. Her feet and hands also became larger. Later the symptoms resembled somewhat those of acute Ménière's disease, but there was no deafness or sickness. The third case had optic atrophy, obesity, myxœdema, and diabetes. During four years her sight had been gradually changing, and during the last year she had become very sleepy and drowsy. There was no tendency to hemianopia in this case. Her feet and hands were now definitely larger than 12 months ago, and the memory worse. Skiagrams showed an enlarged and lobulated sella turcica. Operation was declined. He suggested that possibly the diabetes was due to implication of the posterior lobe of the pituitary; or it might be caused by pressure on the medulla. The fourth case was aged 50, and her condition Dr. Cobbledick diagnosed as early optic atrophy, myxœdema, and pituitary tumour. She had defective memory, thinning of the hair, suffocating feelings in the throat, heart attacks, and 12 months ago she was so ill that her life was despaired of. Her discs appeared normal, but the vision for white was contracted in every direction. Skiagrams showed distinct enlargement of the pituitary body, especially at the posterior part. He regarded this as a suitable case for operation.

The paper was discussed by the PRESIDENT, Mr. PATON, Mr. MAYOU, Mr. W. H. H JESSOP, and Mr. ARNOLD LAWSON, and Dr. COBBLEDICK replied.

[1] Brit. Med. Jour., March 25th, 1916.

SECTION OF DERMATOLOGY.

Demonstration of New Test for Syphilis.—Exhibition of Cases.

A MEETING of this section was held on June 15th, Dr. J. J. PRINGLE, Vice-President, being in the chair.

Mr. J. E. R. MCDONAGH demonstrated his New Test for Syphilis. He said: "As the protein particles in a syphilitic serum are larger and more numerous than those in a normal serum, proved by the ultra-microscope, and by the facts that there is more protein nitrogen, more adsorbed amino-groups, and more adsorbed electrolytes in the former than in the latter, a test has been devised to make these protein particles visible by precipitation. As there are more protein particles in a syphilitic serum, the degree of the precipitate and the rapidity with which it forms will differ from that obtained in a normal serum. To 2 c.c. of glacial acetic acid 0·5 c.c. of serum is added. Four tubes are taken, each containing 1 c.c. of glacial acetic acid, and to these tubes are added 2, 4, 6, and 8 drops respectively of the acid serum. Then 0·2 c.c. of a saturated solution of lanthanum sulphate in glacial acetic acid is pipetted into each tube. The degree of precipitate and the rapidity with which it forms are then noted."

Dr. KNOWSLEY SIBLEY showed a case of Pityriasis Rubra Pilaris in a boy 17 years of age. The rash commenced nine years ago after a supposed attack of measles. The distribution was typical and, as in most of the other cases recorded, the palms were thickened and there were patches of cicatricial alopecia. The patient had been treated with X rays with a little benefit.—Dr. PRINGLE drew attention to the fact that the disease was not differentiated from psoriasis in this country until 1898, and also to the close connexion between pityriasis rubra pilaris and psoriasis, since one condition might merge into the other and *vice versa*. The general impression of the meeting was that, although the condition might spontaneously disappear, treatment in general was unavailing.

Dr. GRAHAM LITTLE showed the following cases: 1. A case of Darier's Disease. The eruption began 12 years ago on the forehead, since when it had affected most of the other parts of the body. There were several lesions on the scalp, but no loss of hair; there was a vertical splitting of the nails on the hands, and on the backs of both hands there were warty growths. A section of one of the lesions was exhibited and it gave the typical picture—degenerated epithelial cells, resembling coccidial spores, hence the original name "psorospermosis." The case had been under the care of Dr. J. M. H. McLeod, and had resisted all kinds of treatment, which was what usually happened with these cases.—Discussion arose as to its etiology, and some of the members thought it was probably parasitic and possibly in some way related to molluscum contagiosum.——2. Some sections of a Cystic Syringoma.

Mr. H. C. SAMUEL showed a case of a woman, aged 65, who was suffering from Lichen Planus Hypertrophicus. The interest of the case was that the lesions were spreading peripherally and leaving scars in the centre.

Dr. A. EDDOWES showed a case of a Bullous Eruption in a boy aged 5.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

SECTION OF OBSTETRICS.

Rotunda Reports.

A MEETING of this section was held on May 19th, Dr. GIBBON FITZGIBBON, the President, being in the chair.

Sir WILLIAM SMYLY having read the Rotunda Reports,

Sir ANDREW HORNE congratulated the governors of the hospital in granting Dr. Henry Jellett a further extension of leave to do ambulance work. He regretted there was no mention of the subject of scopolamine-morphine treatment which has occupied so much attention in the lay press.

Dr. BETHEL SOLOMONS said that he had modified his views concerning scopolamine-morphine anæsthesia since the publication of Dr. Freeland's paper on the subject in 1909. He thought that "twilight sleep" was unsatisfactory unless the method was carried out by trained assistants and nurses—that it was impossible for the ordinary practitioner to give unless he was prepared to devote his whole time to the case. He asked Dr. Rowlette to state his opinion of the present position of sera and vaccines in the treatment of puerperal sepsis. He noted also that two of the patients in the Contracted Pelvis Table were not measured internally. He was aware that the authorities at the Rotunda favoured mensuration by the Skutsch instrument, and he thought it would be a good thing if there was a separate table devoted to Skutsch pelvimetry, as this would draw more attention to its use.

Dr. R. D. PUREFOY said he was not an enthusiast for scopolamine morphine anæsthesia. Amongst the patients who had died from sepsis he recollected that one had not been able to lie down for three weeks prior to admission because of great distress from hydramnios; the labour was slow, pains not ensuing for some days after rupture of the membranes. Her aspect from her admission was that of a woman dying from pernicious anæmia. He was a firm believer in the Skutsch pelvimeter, and regretted that some still relied on the digital method.

Dr. R. J. ROWLETTE said he thought that in the treatment of puerperal sepsis both vaccines and sera should be employed. The vaccines should be autogenous, but pending their preparation stock vaccines should be used. The use of these agents did not preclude any other method of treatment which might be considered advisable in a particular case.

Sir WILLIAM SMYLY said there had been so many changes in the personnel of the hospital staff during the year that it would be impossible to assign the degree of indebtedness to each member who had helped in compiling it, but Dr. J. T. Simpson had done most of the work in preparing the statistics of the report. Regarding scopolamine-morphine, he had given directions that one dose at least should be given to every patient who was in the first stage of labour, but not that it should be pushed to the degree described as "twilight sleep."

BRITISH OTO-LARYNGOLOGICAL SOCIETY.—A meeting of this society was held in the rooms of the Medical Society of London, Chandos-street, W., on June 8th, Mr. Charles J. Heath being in the chair. Mr. Heath having introduced the following motion, several members and visitors spoke in its support:—

Notwithstanding the evidence contained in the report of the Bryce Commission regarding the brutality of the combatant branch of the German army, the Fellows of the British Oto-Laryngological Society did not think it possible that members of the medical profession could have acted as Oberstabsarzt Dr. Aschenbach and other German surgeons did in abandoning the British prisoners of war at Wittenberg camp during an epidemic of typhus fever. They are not a little surprised that medical opinion on this behaviour has not yet made itself heard in this and in neutral countries.

The motion was seconded by Dr. Frederick Spicer and was carried unanimously.—Cases were shown by Dr. Spicer and Mr. Heath.

THE LATE SIR JOSEPH FAYRER AND FALMOUTH.—At the last meeting of the Falmouth town council it was reported that the family of the late Sir Joseph Fayrer had presented a handsome marble bust of their father to the town council. It was decided to place the bust in the council chamber, one of the members remarking that no one had done more to make public the natural gifts of Falmouth than the late Sir Joseph Fayrer.

Reviews and Notices of Books.

Localisation by X Rays and Stereoscopy.

By Sir JAMES MACKENZIE DAVIDSON, M.B., C.M. Aberd. London: H. K. Lewis. 1916. Pp. xi. + 72. Price 7*s.* 6*d.* net.

Sir James Davidson has done a good service, particularly at the present time, in publishing the well-known and reliable methods of localisation, mostly originated by himself, in this handy volume. The general subject of radiography is not touched upon, and apart from some special points in the selection and properties of X ray tubes and a chapter on secondary rays and X ray protection, the author proceeds at once with the consideration of stereoscopic radiography. The various steps in technique are clearly described, and here, as all through the volume, the illustrations are themselves stereoscopic, affording the strongest argument for the more general use of this method in radiography, so greatly is educational value thus increased. Rapid localisation, with more or less simple appliances, by triangulation is next described. This method, or some modification of it, is the one most commonly used during the present war, and for a large proportion of cases it answers extremely well. For some cases more precise methods are necessary, and in the following chapter we have the well-known "cross-thread" arrangement explained in detail. Recent modifications have made the practice of this method more easy and rapid, and the results more certain in the hands of those whose experience has been less than that of the author himself. A still further development for the most accurate localisation of foreign bodies in the eye follows, and to this the author directs special attention, owing to the large increase in such injuries in hand-grenade warfare. Precision is essential if the victim is to have the best chance of saving an eye.

In an appendix the author describes the telephone attachment in surgery, the electromagnet as an aid to localisation, and other matters of interest, concluding with a number of special stereoscopic radiographs which are very valuable in emphasising the advantages of the author's contentions.

Elementary Text-book of Economic Zoology and Entomology.

By V. L. KELLOGG and R. W. DOANE, Professors in Stanford University. London: Constable. 1915. Pp. 532. Price 6*s.* 6*d.* net.

THIS text-book is the joint work of two American zoologists, teachers of zoology, economic and otherwise, in the Californian University, and well qualified for their task. Since economic or applied zoology must rest upon a basis of purely scientific zoology, the authors rightly deal first of all with the general facts of zoology; in this part of the handbook they survey the animal kingdom throughout, wisely declining to be drawn into discussion on the differences between animals and plants, and refraining from committing themselves to a definition on that matter. A fairly comprehensive account of the structure of the frog, grasshopper, hydra, and amœba serves as an introduction to a consideration of the main subdivisions of the animal world which are dealt with in order. This general account is naturally not very full in view of the authors' main object, but what is given to us is clearly put and accurate, at any rate so far as regards undisputed facts. In more disputable matters it is doubtful whether the authorities of the Natural History Museum will agree with our authors when they say, and with the emphasis latent in a footnote, that the British Museum Catalogue of birds, though tabulating 19,000 species, should have left out "about 7000 forms considered by *most* (the italics are ours) ornithologists to be merely varieties."

As the title of the book leads the reader to infer, the economic section of zoology is developed more fully on the entomological side. But it must not be supposed from this that other economic aspects of the science are so curtailed as to be useless to the commencing student. Here again, as elsewhere in their volume and as with other writers,

Professors Kellogg and Doane have been confronted with the pressing, but not easily soluble, problem of what to put in and what to leave out. Economic zoology embraces a great variety of subjects, all of which form the material of many special treatises. But we think that the authors have at least touched upon and extracted some essentials from all of these subdivisions of economic zoology in their very useful little treatise. It may be pointed out, in conclusion, that the illustrations are numerous and to the point. As the book is admittedly an introductory work, dealing only with the elements of zoology, no list of literature is given.

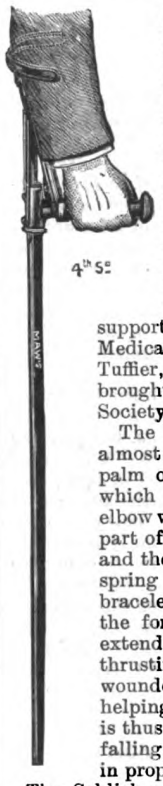
JOURNALS.

The Journal of Physiology. Edited by J. N. LANGLEY, Sc.D., F.R.S. Vol. L., No. 4. Cambridge University Press. 1916. Pp. 217–264. Price 3*s.* 6*d.*—To this issue Professor J. N. Langley, professor of physiology in the University of Cambridge, contributes an admirable sketch of the progress of discovery in the eighteenth century as regards the autonomic nervous system. Professor Langley, who himself has added so largely to our knowledge of what used to be called the sympathetic nervous system, and for which he coined the title "autonomic nervous system," gives a most interesting historical account of this system, excluding, however, the work of Bichat, as his theory was developed chiefly in 1801. Early in last century it was the prevalent belief that all the nerves of the body had their origin in the brain and that the brain was the sole source of nervous influence. The nerve described as "intercostal" until 1732 is now known as the sympathetic chain. It was Winslow who introduced the term "great sympathetic." Only a few of the ganglia in the cranial nerves had been described. Those interested in the dates of discovery of the best known ganglia will find the facts on p. 253. Two main functions were attributed to the intercostal nerve. It was the means by which the brain influenced the viscera, and it was the chief means of nervous connexion between different parts of the body. The views of Willis, Ridley, Vieussens, and others are passed in review. Then follows a summary of the successive steps from 1727, when Petit contested the cerebral origin of the intercostal nerve, the work of Winslow being published in 1732, and that of Monro in 1732. From 1732 to 1750 discovery in relation to the sympathetic system followed an uneventful course. In 1751 Robert Whytt, of Edinburgh, published an essay "On the Vital and other Involuntary Movements of Animals." His conclusions were largely drawn from clinical experience and critical examination of the accounts of others. The chief point of importance in the essay was that it laid the foundation for the subsequent more explicit statement that the great sympathetic was not specially concerned with the sympathies. 1752 brings the author to Haller's paper on the sensibility and irritability of the different parts of the body. Haller taught that contraction could be brought about by stimuli without the intervention of nerves, or of any other intermediary agent. He considered that contractility was the inherent property of the glutinous as distinct from the earthy portion of muscle. His theory of the independent irritability of muscles depended chiefly on his metaphysical conceptions. The relative claims of Haller and Glisson regarding the doctrine of irritability are analysed, and the modifications of Haller's theory by Fontana and Caldani are stated. From 1764 to 1771 the functions of the ganglia began to be discussed, a beginning being made in 1764 by James Johnstone. Unzer in 1771 gave an analysis of the voluntary and involuntary movements based on the data contained in Haller's "Elementa Physiologica," dealing with "reflected actions." Procharka in 1784 followed much the same line as Unzer. From 1772 to 1799 there were a considerable number of anatomical observations upon the intercostal nerve and its branches, chiefly on the connexions of the several cranial nerves with the intercostal. In 1781 Fontana made a step forward in regard to the finer structure of nerve and muscle fibres. His figures, Professor Langley points out, show indistinctly what were afterwards called the axis-cylinder and the medullary sheath. Experimental results new in kind were scanty during the eighteenth century. Although the galvanic method of stimulation was introduced towards the end of the century, it was not at this time applied in a way that gave decisive results. No differences were recognised structurally between skeletal muscles and those of the viscera. A muscle was something which contracted in virtue of inherent properties, but it was generally held that this could only be set in motion by nerves. Mechanical and chemical stimuli were applied to various parts of the body during life and after death. A most striking new observation, however, was the contraction of the pupil and other effects on the eye following section of the intercostal nerve—i.e., the cervical sympathetic nerve—by Petit, an experiment no one seems to have repeated in the 70 years or so after the publication of Petit's paper in 1727.

New Inventions.

A NEW WALKING-STICK CRUTCH.

THE ordinary type of crutch with its head in the armpit has certain drawbacks. If used continuously the crutch tends to set up irritation frequently leading to the formation of boils or, what is more serious, the compression of the large nerves may lead to troublesome palsies. Even if these are avoided by special care, the use of the crutch inevitably tends to a deformation of the thorax and to atrophy of the arms, which are hardly called upon for any muscular action. The injured lower limb, too, is unable to make any active effort in progression and becomes increasingly stiff and useless. A French engineer, M. Schlick, of Nancy, had the ingenious idea of doing away with the armpit leverage and replacing it by a support for the forearm and hand. The "forearm lever walking-stick crutch" is the result. The invention has had the support of Professor Michel, of Nancy (Nancy Medical Society, April 7th, 1915), and of Professor Tuffier, chief surgeon to the Beaujon Hospital, who brought the crutch to the notice of the Surgical Society on June 30th, 1915.



The Schlick walking-stick crutch consists of an almost horizontal handle, which is grasped in the palm of the hand, and of a slightly sloped spring which supports the forearm from the wrist to the elbow when the arm hangs naturally. The greater part of the weight of the body bears on the hand and the wrist, while the forearm resting upon the spring and the elbow which fits into the semi-bracelet play rather an accessory part. In walking the forearm is partially flexed, but is almost fully extended when taking the weight of the body and thrusting it forward; at the same time the wounded limb bears more or less on the ground, helping to carry the weight of the body. There is thus a compensatory action, considerable work falling on the arms, and the remainder on the legs in proportion to their ability to do it.

The Schlick walking-stick crutch therefore protects the user from the results of pressure on the armpit with its risk of paralysis of the arms. Its use compels the active effort of hand, forearm, arm, and shoulder, and is thus an excellent exercise for the upper limb. On its part, the wounded lower limb functions as much as its strength allows it; the voluntary muscular contractions assist in restoring an impeded or sluggish circulation and in preventing atrophy and stiffness.

We have seen this crutch and submitted it to a careful trial and can confirm the claims made on its behalf. A naval officer who has been using the crutch for more than a year, on account of a leg rendered nearly useless by injury, finds that it is possible to move about much more quickly and dexterously than with an ordinary crutch; he can cover half a dozen miles or more without fatigue, climb stairs, cross the streets, and enter tramcars and omnibuses with ease. His attitude is erect, and to the casual observer he appears to be using two sticks and not crutches at all. The novice can become proficient in the use of the sticks within half an hour. The invention has been patented in France, and Messrs. S. Maw, Son and Sons are prepared to supply it in this country.

THE LANCET.

LONDON: SATURDAY, JUNE 24, 1916.

The Declining Birth-rate.

THE report of and the chief evidence taken by the National Birth-rate Commission[1] have been published, and have already attracted considerable attention, the subject dealt with being one which has been forced upon public consideration by the wastage of valuable lives through war. The body which has held the inquiry was reasonably fitted for its task. It was not a Royal Commission, but was instituted, with official recognition, by the National Council of Public Morals, described on the title-page of the report as a council "for the promotion of race regeneration—spiritual, moral, and physical." It comprised no prominent politician or lawyer, but the medical profession was well represented. The findings of the Commission, and such recommendations and suggestions as it has made, may not throw any new light upon the subject inquired into, or foreshadow any completely effective method of dealing with a problem which war has rendered more important than it was before, but the value of the work done should lie largely in the evidence placed on record. The extent of the decline in our national birth-rate is not now in doubt, and the causes through which it is being brought about are becoming less a matter of conjecture. Valuable summaries of the statistical, medical, religious, and economic aspects of the case have been made accessible in this report; and we commend the study of the evidence itself to any who may believe that they can add suggestions to those formulated by the Commissioners. These, numbering at the close of their labours 27 men and women, signed a report which arrives *inter alia* at the following findings of fact:—

1. That the birth-rate has declined to the extent of approximately one-third within the last 35 years.

2. That this decline is not, to any important extent, due to alterations in the marriage-rate, to a rise of the mean age at marriage, or to other causes diminishing the proportion of married women of fertile age in the population.

3. That this decline, although general, has not been uniformly distributed over all sections of the community.

4. That on the whole the decline has been more marked in the more prosperous classes.

5. That the greater incidence of infant mortality upon the less prosperous classes does not reduce their effective fertility to the level of that of the wealthier classes.

They further consider that the following conclusions may be stated, although based upon less substantial evidence than the first five:—

6. Conscious limitation of fertility is widely practised among the middle and upper classes, and there is good reason to think that, in addition to other means of limitation, the illegal induction of abortion frequently occurs among the industrial population.

7. There is no reason to believe that the higher education of women (whatever its indirect results upon the birth-rate may be) has any important effect in diminishing their physiological aptitude to bear children.

Those who are able to study the evidence given before the Commission will no doubt supplement it by consideration of the annual report for 1914 of the Registrar-General (see p. 1271). For this report, which supplies the most recent statistics available in an authoritative form with regard to our birth-rate, will often illustrate the more recent report of the National Birth-rate Commission. For example, the table in the report of the Registrar-General, which deals with the proportion of marriages to marriageable persons, and the evidence of postponement of marriage by women, is introduced to prove that these are causes tending to reduce the birth-rate, independently of the direct actions of married persons. The causes which conduce to diminish the proportion of married persons in the kingdom, or to raise the age at which women marry, are not the concern of the Registrar-General, but the facts involved are matters for consideration in dealing with the whole subject. Later or fewer marriages and the voluntary restriction of families may, in some cases at any rate, proceed from similar motives affecting different individuals, and the ultimate cause is the point which has to be arrived at by those who desire to introduce remedies. We need hardly say that there may be no one ultimate cause, but rather a combination of causes operating together. In considering this question due weight must be given to the evidence of Dr. J. BROWNLEE and Dr. A. K. CHALMERS pointing to the occurrence of cyclical variations in the birth-rate. One point at any rate would appear to be established, that to whatever extent causes independent of the voluntary action of individuals, such as conditions of housing, may operate to diminish or to increase the fertility of parents, there is an appreciable and increasing fall in the number of births taking place through voluntary interference with what may be called "the course of nature." This does not affect our own country only, as we are all aware, and it was with regard to Germany, the enemy with whom we are now engaged in a life-and-death struggle, and to the variations in birth statistics in different parts of the German empire, that a witness, Dr. C. V. DRYSDALE, the secretary of the Malthusian League, made the following observations: "There can be no doubt whatever that ignorance and recklessness at the present time are essential to high birth-rates." Whatever view we may hold as to this, we may be certain at all events that where the birth-rate has fallen through the voluntary action of potential parents it will not be the increase either of ignorance or of recklessness that will raise it. It will rather be the dissemination of the ambition to have children, as education explains the prudence of such a course, whether from a personal or from a national and patriotic point of view. We may be sure also that a resourceful and methodical enemy has already weighed the question of repairing its losses. Indeed, quotations from the German press

[1] The Declining Birth-rate, its Causes and Effects. London: Chapman and Hall. 1916. Pp. 450. Price 10*s.* 6*d.* net.

have been published in this country showing that the rewarding of parents of large families forms in Germany part of a strongly advocated programme of future organised racial development. Other methods, too, for encouraging reproduction have been spoken of, the possibility of which we can hardly credit even with an enemy known to be both practical and unscrupulous. Education, however, is likely to play its part in the task, and the education of the young to subordinate the convenience of the individual to the demands of the State has already supplied Germany with a reserve of strength and determination of great value to her in delaying her ultimate defeat. We may regard with horror the kind of man which German education has created in too great a quantity, without denying the effect of education on the young in moulding their future as citizens.

Not the least important thing to be considered when the Government of the day appoints a Royal Commission or a Committee, departmental or otherwise, to inquire into an admitted or supposed public evil, is the question of a remedy. The report of such a body should conclude by recommending legislation directly aimed at diminishing the mischief inquired into. In the case of the National Birth-Rate Commission, however, it has hardly been possible to follow this course. The increase of the national birth-rate, so far as it is dependent upon the voluntary action of those who otherwise might become parents, is not a subject suited for direct legislation. Its fringe can be touched; particular dangers which diminish, or tend to diminish, the number of children born may be averted, it is true, and the number of those reared may be increased, but the matter as a whole will still be left practically where it was. For example, the sale of diachylon, stated by witnesses to be largely used in some localities for procuring abortion, may be rendered difficult. If it were stopped entirely, however, other methods by which abortion can be procured or attempted by evilly disposed persons would not be affected, and the spirit which induces married couples to avoid bringing children into the world would stand unaltered. The pain attendant upon bearing children may deter some women from becoming mothers, but the fourth and sixth findings of the Commission are probably correct —that is to say, the decline in the birth-rate to a large extent, at any rate, is the result of the deliberate action of those classes of society who would appear to be the least likely to suffer from having large families. These classes have followed, and in their turn have set, an example which is likely to be copied more and more widely, unless the sense of a demand for children to carry on the race, and a certain sobering of the nation by the horrors of war, should combine to produce a reaction. Prudential reasons are, no doubt, responsible for the limitation of many families, prudence in one direction being counterbalanced by irresponsibility in another. Young couples, of an age when the pursuit of personal pleasure seems too important to be foregone, think it prudent to be childless and so free to enjoy themselves. They may be preparing for themselves a joyless middle age, and an old age when recollection of the pleasures of their youth will hardly console their solitude. The remedy would seem to lie rather in causing them to take a different view of life in general than in trying to induce them by direct persuasion to undertake the responsibility of bringing children into the world. When the war ends we may see a more sober and earnest nation reviewing the situation in which it finds itself; for ourselves, we believe that the young men and women who have taken part in and witnessed the great struggle will become the parents of a generation not so selfishly frivolous as that into which they themselves were born.

Twenty-four of the signatories of the main report, believing that more than it contains would be expected of them, have taken into consideration the two following questions, and have submitted recommendations in connexion with them: 1. Is the present decline of our national birth-rate regrettable? 2. If it is regrettable, is it preventable, and, if so, how? They have done this without dogmatising and have perhaps made their views public with what will be to some a disappointing lack of emphasis and originality. The whole subject of the Commission's inquiry, however, is one very definitely adapted for the consideration of our medical readers, and we have no doubt that after reading the evidence given in the light of their own experience, many of them will be able to make valuable additions to the Commissioners' observations. It will be observed that Mr. F. E. FREMANTLE, a valuable member of the Commission, has not signed its report. This does not imply either that he did not take part in its sittings or that he differs from its conclusions. He is, however, now serving in Egypt, and being absent from England at the time when the Commission's findings were finally discussed and formulated, did not, as we understand, consider himself justified in signing.

Gunshot Injuries of the Jaws.

IN another column we publish an account of an important gathering recently held in London under the auspices of the British Dental Association to discuss the treatment of gunshot injuries of the jaw. The presence of several French and Belgian dental surgeons added considerable interest to the proceedings, because it enabled the discussion of the various methods which are being adopted to deal with these injuries and their resulting deformities to be comprehensive of many schools of thought, and to be critical and free. The President of the Association (Mr. W. H. DOLAMORE) closed his address by insisting upon the importance of the best treatment being provided for gunshot wounds of the jaw. "A young soldier," he said, "good enough looking to his own ideas, for a man does not readily admit the reverse, is struck in the face by a fragment of shell or by a shrapnel bullet. His jaw is splintered, his face is torn. He can scarcely breathe, or swallow, or speak; and if he be conscious, or when he recovers consciousness, the idea crosses his mind that he is permanently

deformed, and even perhaps hideous. Can surgery offer a greater comfort to any man than to be able to tell such an one that it can ease his pain, restore his face, remodel his jaw? Yet cold comfort would it be to him if he knew of others to whom these words had also been whispered, but the promise had not been kept. And that soldier may, in these days of national service, be our own kith and kin." These words put the situation tersely and eloquently.

That very much may be done to cure, or at any rate alleviate, the terrible injuries resulting from gunshot wounds of the jaws is proved from a perusal of the many papers that have recently appeared on the subject, and it is also certain that the happiest results are those obtained by a close coöperation between surgeon and dental surgeon. Is all being done in this country that should be done for such injuries? We do not think it is. In Germany we know that as early as August, 1914, a hospital of 225 beds was opened at Düsseldorf, and that by April of last year similar institutions had been opened in other parts of the German Empire. The French early realised the importance of bringing these injuries under the care of those capable of treating them, and they rapidly organised special hospitals. In England no attempt was made to concentrate such cases until July of last year, when the Eastern Command opened a special hospital at Croydon, and now nearly two years after the outbreak of the war fresh centres are being formed in connexion with a few of the military hospitals. If these special hospitals are to give the soldiers the best treatment their surgical staffs should be chosen from those with a special aptitude for plastic operations, and the dental surgeons from those who have had experience of injured jaws in our great civilian hospitals. Gunshot injuries of the jaws require the most skilful treatment, and the treatment of these cases cannot be handed over to any accessible dental surgeon without a chance of disastrous results. This is now, of course, widely recognised, but we have only lately come to look at the facts in their right proportion.

Lack of appreciation of the importance of these injuries has meant that in the first place there are numbers of our wounded soldiers who will pass the remainder of their days with permanent facial deformities which might have been remedied if the best special treatment had been available. As a matter of fact such detailed forethought would have been completely impossible, but no doubt many soldiers have had to be invalided out of the army for wounds of this character who could have been restored, we now know, as "efficients." Again, neglect of treatment has of necessity added considerably to the period of stay in hospital and placed a greater incubus on the Pension Fund. To those unacquainted with the work that can be done to gunshot injuries of the jaw we would recommend a valuable paper by Mr. DOLAMORE in the June 1st issue of the *British Dental Journal*, in which he describes and illustrates the methods used in the hospitals of Germany, and to a paper by Mr. J. F. COLYER in the April issue of the *Royal Army Medical Corps Journal*.

Annotations.

"Ne quid nimis."

AUXILIARY ROYAL ARMY MEDICAL CORPS FUNDS.

THE movement inaugurated on June 1st at the Royal Army Medical College to consider the desirability of establishing a benevolent fund for the Services auxiliary to the Royal Army Medical Corps is now taking definite shape. A meeting will be held at 2.45 P.M. at the Royal Army Medical College on Monday next, June 26th, when a scheme formulated by the provisional committee will be discussed. The three auxiliary branches of the Royal Army Medical Corps—namely, the Special Reserve, the Territorials, and those holding Temporary appointments in the R.A.M.C.—will be included in the administration of the funds, under two headings: (*a*) an officers' benevolent branch, and (*b*) a relief branch; the establishment of a loan fund to help medical officers of the auxiliary forces who find themselves in temporary difficulty on returning to civil practice is also under consideration. In another column the proposals under the scheme are more fully set out.

RECOVERY FROM BLINDNESS DUE TO CEREBRO-SPINAL MENINGITIS.

AT a meeting of the Société Médicale des Hôpitaux of Paris, M. Arnold Netter showed the possibility of recovery from blindness due to cerebro-spinal meningitis, even when accompanied by ocular lesions. He related the case of a child, aged 21 months, who was admitted into hospital under his care on Dec. 20th. She had been ill since Nov. 24th, and various diagnoses had been made. On admission she was thin and cachectic. Neither rigidity of the neck nor Kernig's sign was present. The abdomen was retracted and the tache cérébrale was obtained. Lumbar puncture yielded a purulent fluid containing many meningococci, and 30 c.c. of antimeningococcic serum were injected. The puncture and injection were repeated on the two following days. The liquid yielded by the third puncture was clear and sterile. Recovery appeared to take place, but on Jan. 9th the child was found to be blind. Examination of the eyes, including the fundi, showed nothing abnormal, but the amaurosis was absolute, and the pupils did not react to light. Though there were no symptoms of accumulation of fluid in the ventricles lumbar puncture was performed on Jan. 15th. The cerebro-spinal fluid rushed out in a jet, indicating high tension, but it was limpid, its chemical composition was normal, and only very few cells (mononuclears and lymphocytes) were present. Puncture was not followed by any return of vision. On Jan. 22nd 15 c.c. of cerebro-spinal fluid were withdrawn, and on the following day the lumbar region was swollen, which was manifestly due to infiltration of the connective tissue with cerebro-spinal fluid. On the 23rd vision began to return and by the 28th objects could be recognised. But vision again deteriorated. On Feb. 3rd puncture was again performed. On the next day vision improved again and on the following days it continued to do so and was definitely regained. M. Rochon-Duvigneaud, the ophthalmologist who examined the eyes, attributed the blindness to pressure on

the optic tracts by hydrocephalus. The recovery of vision after the punctures bore out this view. In another case, in an infant aged 13 months, M. Netter observed a similar return of vision. He referred to a third case reported to the Académie de Médecine by MM. Triboulet, Rolland, and Fenestre. A child, aged 2 years, had cerebro-spinal meningitis. Notwithstanding repeated injections of serum into the spinal canal and cerebral ventricles, the head became enormously increased in size and there were convergent strabismus and dilated pupils. The child appeared to be blind and an idiot. Examination of the eyes by M. Dupuy-Dutemps showed well-marked double optic atrophy. However, complete recovery took place.

IN ARTICULO MORTIS.

AN idea prevalent among the lay public is that medical men when they fall ill deserve pity, seeing that they know the ins and outs of their disease, can foresee its course, and estimate its pains and penalties. The popular notion was embodied with startling clearness and charm of style by the late Ernest Dowson in the fourth number of the *Savoy*, published 20 years ago (August, 1896). In "The Dying of Francis Donne" Dowson imagines his hero, a rising young surgeon —noted among other things for the brilliancy of his lectures, which detractors pronounce "mere literature,"—to be suddenly confronted with the knowledge that he is doomed to die shortly of a terrible disease—presumably cancer. (A similar situation, by the bye, is imagined by Paul Bourget in his last novel.) Donne looks at himself in his mirror and reflects: "I, Francis Donne, am going to die," and presently, "I am going *to die soon:* in a few months, in six perhaps, certainly in a year." He notices lines in his face and a certain greyness. He is only 35, but has for some time been suffering from "a dull immutable pain," which has now declared its nature. He tries to make-believe—cheats himself almost into the notion that he is suffering from nerves and that a long holiday will set him right. But he becomes the victim of a morbid self-consciousness. It seems that his acquaintances, pupils, and colleagues have adopted "an attitude of evasion, a hypocritical air of ignoring a fact that was obvious and unpleasant." He comes to the conclusion that it will be best to die among strangers. Like a dying animal, he shuns the world he has known. He drops suddenly out and goes to a remote village in Brittany, on the Atlantic coast.

Was not death, too, inevitable and natural an operation as it was, essentially a process to undergo apart and hide jealously, as much as other natural and ignoble processes of the body? And the animal, who steals away to an uttermost place in the forest, who gives up his breath in a solitude and hides his dying like a shameful thing,—might he not offer an example that it would be well for the dignity of poor humanity to follow?

He finds a summer world in Finistére, steeps himself in lethargy, almost regains hope at times.

But if the days were not without their pleasantness, the nights were always horrible—a torture of the body and an agony of the spirit. Sleep was far away, and the brain, which had been lulled till the evening, would awake, would grow electric with life, and take strange and abominable flights into the darkness of the pit, into the black night of the unknowable and the unknown.

At last, from a longer and more tortured night than all the others, he awakes to full consciousness.

He opened his eyes, and seemed to discern a few blurred figures against the darkness of the closed shutters through which one broad ray filtered in; but he could not distinguish their faces, and he closed his eyes once more. An immense and ineffable tiredness had come over him, but the pain —oh, miracle! had ceased ..... And it suddenly flashed over him that this—*this* was death; this was the thing against which he had cried and revolted; the horror from which he would have escaped; this utter luxury of physical exhaustion, this calm, this release.

He would have smiled, but could not. His life flashes before him in review—the death of his mother from an ill which later he could have cured, the friend who had shot himself without cause, the girl whom he had loved, but who did not love him. "All that was distorted in life was adjusted and justified in the light of his sudden knowledge. *Beati Mortui* ....."

And then the great tiredness swept over him once more, and a fainter consciousness, in which he could yet just dimly hear, as in a dream, the sound of Latin prayers.

It is doubtful whether any but a man of letters, a poet, as Ernest Dowson himself was, would die thus.

PARALYSIS FROM FRIGHT.

IN the *Journal of the Canadian Medical Association* Lieutenant-Colonel R. D. Rudolf has recorded a case of hemiplegia produced in a previously healthy lad by sudden fright, which, in addition to its medical interest, is not without a comic element. A private, aged 20 years, was admitted into the Canadian General Hospital, France, with the diagnosis of "boils and facial paralysis." The family history was good and he had never suffered from any illness until he went to India four years ago as a bugler. He had been there eight weeks, when on the evening of a very hot day he went on duty for the first time. He was sentry on the deadhouse, and his orders were to kick at the door every 15 minutes to scare away the rats. He was very nervous, but at 9 o'clock kicked at the door and nothing happened. At 9.15 he did so again, when to his horror a voice cried from within, "W'at the 'ell are you kicking about?" In terror he fled to the guard-room, but fell before he reached that haven. It appears that before he went on duty a guard had placed a drunken soldier in the mortuary to get sober and omitted to inform the new sentry. The lad was picked up unconscious and taken to hospital. He remained unconscious for six days, and when he recovered he could not speak, the left side of the body was paralysed, he could not shut the left eye, and the left side of the body was anæsthetic. He remained in this condition for about six months, the last three of which were spent in England. Then he gradually improved and re-enlisted. On examination he was a well-grown, healthy-looking lad. He could not close the left eye, but otherwise facial paralysis was not manifest until he smiled or tried to show his upper teeth. He could wrinkle the left brow almost as much as the right. The muscles of the left limbs were well developed but distinctly weak. The grip of the left hand was poor and he could not stand on the toes of the left foot. The left knee-jerk was slightly greater than the right. The plantar reflex was absent on the left side. The tongue was not deflected to either side. The fields of vision and the faucial reflex were normal. Sensibility to touch was diminished and to heat, cold, and pain absent all over the left side, including the tongue, left nostril, and genitals. The patient stated that the leg first recovered from the paralysis, then the arm, and finally the face. Lieutenant-Colonel Rudolf regards the condition as of the same nature as hysteria, and compares it to the symptoms produced by shell

shock, such as loss of memory, blindness, deafness, and deaf-mutism. Dr. Crile, of Cleveland, has shown that severe fright will produce in animals changes in the cerebral cells. Possibly the same may occur in man.

THE MEDICAL INSURANCE AGENCY.

A MEETING of the committee of the Medical Insurance Agency, at which Dr. G. E. Haslip presided, was held at the offices of the British Medical Association on June 15th. Allusion was made to the loss of a valuable counsellor in the person of Sir Frederic Hewitt, whose death had made a gap difficult to fill, and a letter of sympathy was sent to Lady Hewitt. The audited financial statement for the year 1915 and the chairman's review of the year's work were then submitted and approved. There had been an encouraging expansion of business under each head, the commissions on motor-car insurances having been specially good. A serious problem with which many medical men liable to military service and not already insured had been faced was solved for them by the success of the agency in inducing an office of high standing to accept assurances at more reasonable rates. Out of a total income from commissions of £1950 a sum of £838 had been returned to members insuring through the agency, yet still leaving £798 available to divide in grants among various medical benevolent funds. £630 were thus distributed, double the sum of the preceding year. The medical profession as a whole may well take fresh note of this highly gratifying result. Insurance through the agency ensures not merely a rebate in reduction of premiums to be paid, but gives the member a share in conferring substantial benefit on the benevolent funds of his profession. The chairman reported that up to the end of 1915 these rebates had amounted to £4530, and the sums distributed for charitable purposes to a goodly total of £1700. He proposed the immediate distribution of a further £400 out of surplus earnings of the current year, and the committee decided to allot grants as follows: Royal Medical Benevolent Fund, £150; Royal Medical Benevolent Fund Guild and Epsom College Benevolent Fund, to each £100; R.A.M.C. Officers' Benevolent Fund and THE LANCET Special Fund, to each £25. The energy and business ability of the chairman and the staff of the agency continue to bear fruit. The secretary of the Medical Insurance Agency is Mr. Guy Elliston, 429, Strand, W.C.

THE CONTROL OF FOOT-AND-MOUTH DISEASE.

COMMENTING on the report of the Diseases of Animals Act,[1] a correspondent calls attention to the evidence of good work done in checking the spread of foot-and-mouth disease at a time when exceptional difficulties stood in the way. The disease is communicable to human beings through the milk, which is either contaminated by the virus from the vesicles, or itself directly contagious in the febrile stage of the disease. The fact that there were no cases of spread to children or adults through the milk shows the value of the preventive measures employed. Some adverse criticism was levelled against the policy of slaughtering all infected animals at a time when the country's food-supply was restricted, but we think that the authorities acted wisely in so doing, as it is known that animals may recover from an attack and yet remain for some time carriers of the contagion. The practice of calling in neighbours in consultation when animals are ailing is condemned, as infection may easily be carried on clothes and boots to fresh centres.

[1] THE LANCET, June 3rd, p. 1134.

THE SURGICAL TREATMENT OF BRONCHIECTASIS.

REMARKING that the surgical treatment of intrathoracic disease has been much facilitated during the last 10 or 12 years by the adoption of Sauerbruch and Brauer's apparatus for operating under raised or reduced atmospheric pressure, Dr. J. H. Zaaijer, of Leyden, goes on to describe[1] his own experience with bronchiectasis. His own apparatus is very simple, and is arranged so as to make the patient breathe air a little above the atmospheric pressure, thus preventing collapse of the lung should the pleural cavity be opened by accident or otherwise during the course of the operation. His experience extends to four patients with bronchiectasis and offensive sputum. The first of these, a woman, was anæsthetised with chloroform, ether, and oxygen; the bronchiectasis was confined to the left lower lobe, and Dr. Zaaijer removed 13 or 14 cm. of the sixth, seventh, eighth, ninth, and tenth ribs subperiosteally, the resection starting medial to the costal angle behind, thus allowing the lower part of the chest wall to fall in. The wound was sewn up and dressed, with the addition of a large pad of cotton-wool to produce collapse of the underlying lung tissue. The patient made a good recovery, and 11 months after the operation was well content with the improvement in her condition. The sputum averaged one ounce a day, having been four times as much before the operation, and was inoffensive, while the clubbing of her finger-tips had disappeared. The base of the left lung was collapsed and dull on percussion. The second patient, a sturdy man aged 21, had suffered much from cough all his life and had had offensive sputum for four years, with drumstick finger-tips; at 20 he had pneumonia and pleurisy. The sputum was extremely offensive, varying in amount from 5 to 12 ounces a day, and settled into three layers on standing. General bronchitis was present, and the left lower lobe was dull on percussion, while its lower margin behind was fixed. As in the previous case, medicinal treatment had been long tried without success, including intratracheal injections of gomenol (the essential oil from the leaves of *Melaleuca viridiflora*, nearly allied to oil of cajuput chemically). The patient was anæsthetised with chloroform, and 17 cm. were excised subperiosteally from the seventh, eighth, and ninth ribs, 13 cm. from the tenth on the left side, the resections beginning medial to the costal angles; the pleura was not injured. A large pad of cotton-wool was applied to drive the chest wall inwards at the area of operation. The patient made a good recovery; the sputum sank to an ounce or less a day and became inoffensive. Four months later the patient caught a chill; he returned to hospital, bringing up some six ounces of offensive sputum daily. Medical treatment gave no relief, and a month later the site of the previous operation was opened up again. Subperiosteal resection of 21 cm. of the sixth rib was performed; the previously excised ribs had formed again as thick bony masses, and these were removed *en masse* together with their intercostal

[1] Nederl. Tijdschr. voor Geneesk., Amsterdam, 1916, i., 651.

muscles, leaving the thickened pleura intact. In addition, 3 cm. of the periosteum of the sixth rib were dissected off with difficulty. The wound was dressed with a large compress firmly applied as before. A good recovery was made; four months after the second operation the patient was well, almost free from cough and expectoration, though the drumstick fingers remained unaltered; the use of the left arm was unimpaired, the upper lobe of the left lung seemed normal while the lower lobe was collapsed. Dr. Zaaijer's third patient was a weakly woman aged 35, who had suffered from bronchiectasis from the age of 4. The right lung was most involved; under local anæsthesia with novocaine from 11 to 20 cm. of the eleventh, seventh, eighth, ninth, and tenth ribs were removed subperiosteally, in that order. The pleura was not injured, and the wound was dressed with a large pressure pad tightly bandaged on. The wound healed satisfactorily, but convalescence was interrupted by an attack of pleurisy and pneumonia on the left side. Ultimately the result of the operation was good, as it caused collapse of the bronchiectatic part of the right lung. The fourth patient, a well-nourished woman aged 26, had had cough and offensive expectoration, not relieved by medical treatment, for a year. The intratracheal injection of gomenol was tried, but the results were unsatisfactory. Operation under local anæsthesia was decided upon. First the seventh, eighth, ninth, tenth, and eleventh ribs on the right side were resected subperiosteally in lengths of from 12 to 17 cm., starting behind their angles. Next the periosteum and intercostal tissues attached to these portions of the ribs were dissected off the pleura and removed. Finally, 17 cm. of the sixth rib were resected subperiosteally and removed with their periosteum. The pleura was not injured. The wound was dressed and pressure was applied over the area of operation as in the previous cases. The patient recovered rapidly, and when seen four months after the operation was nearly free from cough, and well pleased with the success of the treatment. A large amount of the right lung showed signs of collapse. Dr. Zaaijer gives a long discussion of the various operative treatments that have been employed for the surgical relief of bronchiectasis. Among those he mentions are (1) pneumotomy, or incision of the affected parts of the lung, with or without the resection of the overlying ribs. Sauerbruch reported on 123 such cases in 1911, and found that 40 were cured, 7 improved, 33 unimproved, while 43 had died. Körte recorded 11 deaths among 15 patients. Many surgeons, including Sauerbruch, Küttner, Graser, Meyer, and Quincke and Jehn, have reported favourable results from (2) thoracoplasty in bronchiectasis, and Dr. Zaaijer's own experience, recorded above, is in agreement with theirs. Forlanini's method of producing (3) artificial pneumothorax has rarely been successful. Tuffier's method of producing (4) extrapleural tamponage with paraffin, which should cause collapse of the adjacent lung, appears to have been tried without success in bronchiectasis by Lilienthal. Küttner has reported a cure by (5) pneumolysis, or freeing the bronchiectatic lung tissue from its adhesions, followed by excision of ribs and removal of the diseased tissue; Garré has added to this operation (6) transposition of a part of the sound lung to take the place of the excised portion. In 1911 Stürtz advised (7) section of the phrenic nerve on the affected side, or, better, resection of a part of it, in order to produce paralysis of that half of the diaphragm, which then rises high in the thorax; Sauerbruch reported two unsatisfactory results of this operation in 1914, in cases of bronchiectasis. In 1912 Bruns and Sauerbruch reported that in experimental animals (8) ligature of a branch of the pulmonary artery caused the transformation of the corresponding lung tissue into a firm mass of scar tissue; Meyer has put on record 11 cases in which this ligature was applied to human beings with bronchiectasis, and in some cases was followed by the resection of ribs, with improvement if not with cure. Dr. Zaaijer thinks that this ligature may be a sound preliminary to a last surgical method of treating bronchiectasis, namely (9) excision of the diseased part of the lung. Such excision is usually fatal in the absence of pleural adhesions. It may be added that Meyer has recommended the intrapericardial ligature of the branches of the pulmonary artery. Dr. Zaaijer points out the various defects of all the operations he considers, and sums up in favour of extensive resection of ribs with their periosteum and the intercostal tissues as the best operation for the relief of bronchiectasis. After the operation pressure should be made over the area treated in order to secure the maximum degree of pulmonary collapse and compression.

"SHUTTLE-KISSING" AGAIN.

NEARLY four years ago a Committee of the Home Office and the Local Government Board reported on the practice of "kissing the shuttle" for the threading of the loom in weaving-sheds without recommending legislation or regulations on the subject, but relying on the publicity given so to stimulate invention and popular feeling that no drastic administrative action would be found necessary after a few years. A paper read by Dr. A. Middleton Hewat, tuberculosis officer for Preston, before the North-Western Branch of the Society of Medical Officers of Health and printed in the May number of *Public Health*, shows that this insanitary practice still persists and is a source of danger to the cotton operatives. Dr. Hewat's figures show a marked excess of tuberculosis notifications in female cotton operatives over those in adult females, excluding cotton operatives—4·3 per 1000 in the former, 2·5 per 1000 in the latter, during 1915, and the difference was even more marked in 1914. Although the available figures do not as yet confirm it, he believes that pulmonary tuberculosis is also more prevalent among the male workers also. It is naturally difficult to get direct evidence of infection from the use of looms soiled with tuberculous sputum, but Dr. Hewat is able to adduce a suggestive series of cases in which operatives with open tuberculosis remained for years at their work, sharing the same loom with a partner. Other conditions in the sheds conduce to tuberculous infection, as the irritating dust tends to set up a bronchial and pulmonary catarrh which forms a suitable nidus for the tubercle bacillus. Pneumoconiosis is admittedly frequent among the operatives, and striking evidence of the amount of dust which must be inhaled in shuttle-kissing is afforded by the quantity found in the filter of a mechanical kisser after a few days' use. It is evident from Dr. Hewat's observations that the practice has not disappeared in the way which had been hoped for, and that administrative action may be necessary to enforce the installation of mechanical means for the threading of the looms.

ANNUAL REPORT FOR 1914 OF THE REGISTRAR-GENERAL.[1]

BY JOHN F. W. TATHAM, M.A., M.D.DUR., F.R.C.P.LOND. & IREL., D.P.H., &C.,

LATE SUPERINTENDENT OF STATISTICS, GENERAL REGISTER OFFICE.

I.

THE salient points in this report were given in a leading article in THE LANCET of April 29th, but the importance of the statistics of population warrants a more elaborate notice of this great official document on the subject. The public has been impelled by the force of the dread circumstances in which we live to respect the arguments of figures, and medical men day by day make more frequent appeal to these arguments. Several new statistical tables, mostly very elaborate, based on the Census of 1911, have appeared in the reports since that year, and must have entailed much labour. Relating to a long series of years these tables are essentially summaries, and their reappearance in this report has been deemed unnecessary. For reference these tables will be found practically indispensable. Conformably with former practice prominence will be given here to matters specially interesting from a preventive point of view, and in dealing with obscure points advantage will be taken of the summaries referred to.

Birth-rates and Fertility.

The crude birth-rate or ratio of births to total population is the ordinary form of statement where the object is to ascertain the net result of various factors concerned in reproduction. It expresses the sum of influences governing the rate at which a community is reproducing itself, and therefore furnishes, in association with the death-rate, a ready means of estimating the natural increase of a population. For the measurement of human fertility the crude birth-rate is the only form of statement available; but as the fertility of mothers is only one of several factors determining the rate of reproduction it cannot be relied on as a perfect test of the fertility of a community—i.e., *of its rate in proportion to opportunity of reproduction.* The crude birth-rate varies with the proportion of females married and unmarried.

A table in this report shows the changes in the proportion and in the age constitution of the married females living at the dates of the last five censuses. The first change consists in the larger proportion of women of child-bearing age in the entire population; the second in the proportion of these who are married; the third in the increasing average age of married women under 45 years old. The first of these changes makes for increase of the rate of birth, the last two for its decrease. Unfortunately, our birth registers contain no record of the age of parents; consequently no data being available concerning fertility at different ages, it is impossible to determine the effect on the birth-rate of increase in the age of potential mothers. The effect of decrease in the fertility of English wives—due partly to their greater average age, but largely, no doubt, to deliberate avoidance of pregnancy—is masked to some extent by the net result of other changes in the composition of the population.

The most noticeable features in this table are: (1) the fall in the proportion of marriages to marriageable persons, and (2) the evidence of postponement of marriage by women. The proportion of women at fertile ages who are married was higher at the last census than in 1901, but the proportion of these had fallen at three out of the four stages into which the period of human fertility is divided. The latter change results from the postponement of marriage. When we reflect on the extent to which fertility diminishes with advancing age, it is evident that this change of itself must have appreciably reduced the birth-rate. The highest rates in 1914 occurred in Wales and the next highest in the North of England, while the rates in the South were by far the lowest. These variations depend upon real differences of fertility, for when allowance is made for variations in the proportion of women and of married women of fertile ages they are still apparent.

In the year under notice the rate of *illegitimate fertility* expressed, as it ought to be, in proportion to the unmarried and widowed female population aged from 15 to 45 years was 7·7 per 1000. Thus computed, the fall in illegitimacy since 1876–80 was equal to 46·5 per cent., whilst it did not exceed 10·5 per cent. when the illegitimate were compared with the total births. Stated in relation to unmarried women of conceptive ages, illegitimate births were most frequent in Wales and least so in the South of England.

Mortality in Infancy and Childhood.

In times gone by the progress of preventive medicine has been materially hindered by the lack of concerted action between the State departments charged with the oversight of public health administration. For many years subsequent to the establishment of the General Register Office in 1837 no attempt was made to coördinate the work of its medical department with that of the Local Government Board, the two departments having acted independently even in statistical affairs obviously of mutual concern. Fortunately all this is now changed; henceforward the principle of collaboration will be observed between these authorities. The Registrar-General has expressed his desire to reach agreement with the Local Government Board for the establishment of an identical policy in these matters, and incidentally has exposed the absurdity of duplicating statistics for the same areas necessarily in discord with each other. Nor are the above the only authorities whose good offices in this direction may be hoped for. The action of the Board of Education and of the Home Office in providing for the instruction of the people and for the regulation of factory labour may assuredly be included. All these things are of happy augury for the future. Coördination in the administrative details of public health and elementary education has always been contended for in THE LANCET, and it is gratifying to learn that such representations are at length receiving official attention.

Among former advocates of departmental coöperation the name of Sir William Power will be remembered for his efforts to improve the infant mortality returns required by the central authority from medical officers of health. In the year 1905 for the first time the official report gave the number and causes of the deaths occurring locally in each of the first four weeks and in each of the 11 succeeding months after birth. Following similar lines, Dr. Arthur Newsholme has substantially advanced our knowledge of the subject in an elaborate series of studies on mortality in infancy and childhood. Previously, the question of infant mortality being under discussion, the rate was specified without distinction of sex, cause, or locality. In this report there are tables showing for each geographical division of England and Wales the relative mortality of each sex at ages under one month, and in successive trimesters of the first year. From these it appears that whilst the death-rate of boys under one year amounted to 116 per 1000, it did not exceed 93 among girls. Moreover, at each division of the first year male mortality was higher than female, but this was exceptionally true in the first four weeks after birth.

In the present and in recent previous reports the comparison of mortality has been extended to children up to school age—i.e., to the end of the period of exclusively home influence. In the report for 1914 the mortality in the second year of life is set forth in a table, and another gives the mortality between the ages of two and five years, whilst a further table shows the survivors per 10 000 births in each geographical area. The range of variation in the second year of life is much greater than in the first. It extends from 11·72 in the rural districts of the South to 55·72 in the county boroughs of the North; the chances of survival during the second year of life in the latter being not much greater than those during the first year of life in the former. In each class of area mortality increases without exception, from south to north, and from rural areas to large towns in all parts of England.

From the cumulative results of mortality shown in the report it appears that of the children born in the northern county boroughs 21 per cent. may be expected to die before completing their fifth year, while in the rural districts of the south the expected proportion is only 9 per cent., or less than half of the other. Judging by the experience of the last four years there is no class of area in the south, outside London,

[1] Wyman and Sons, Fetter-lane. [Cd. 8206.] Folio pp. 582. Price 5s. 1d.

which does not rear a larger proportion of its children than do even the rural districts of the north.

Effective Fertility.

In the report for 1913 there appears an interesting table (not repeated in the present) in which comparison is carried a stage further by stating the combined effect of the fertility and early mortality of each population; in other words, by showing the extent to which it produces and rears children. The result may be regarded as its "effective fertility," and gives some indication of the degree in which success in preservation of young lives is likely to compensate for failure in their production.

The greatest effect of successful life preservation in compensating for its non-production is naturally shown by comparison of the county boroughs of the North of England with the rural districts of the South. And it is noteworthy that while the birth-rate of the former was 25·9 against 19·4 in the latter, this difference would be reduced at age 5 to that between 20·7 and 17·6, the survivors per 1000 living in each case. The advantage in *regard to birth-rate* held by the large towns in 1913 was still maintained on the attainment of the fifth year. The advantage in *regard to fertility*, on the other hand, was held by the rural districts (the higher birth-rates of the towns being accounted for by their higher proportion of women of conceptive age), and this advantage became gradually accentuated by their more favourable mortality experience. However stated, the fertility of Wales exceeds that of England, and this has been the case in each of the three years 1911–13. The survivors at age 5 in Wales exceed the births in the south of England in each of the geographical areas, and the smaller towns of the principality approximate most nearly to the old-fashioned standard of birth-rate.

Causes of Infant Mortality.

In the tables published since the Census year infant deaths have been shown in the first month and in each trimester of the first year after birth. The mortality has also been recorded at the successive age-groups in each of the five geographical divisions of England.

In 1914 infant mortality showed a decrease on that of the preceding year from all the principal causes except whooping-cough. The summer of that year was drier and warmer than that of the preceding year, nevertheless the mortality from diarrhœal diseases fell from 19·3 in 1913 to 17·4, although the rate was still more than double that obtaining in 1912, when it was only 7·72 per 1000 births. The mortality from tuberculosis in 1914 fell to 2·86 per 1000 births, and was the lowest recorded except that of 1912. The fall noticed in the previous year's report in the mortality from tuberculous meningitis was maintained, the rate being 0·99, the lowest in the table. There was, however, a corresponding rise in the loss of life from other forms of meningitis. The mortality from the indefinite group of wasting diseases was the lowest since 1890. The loss of life due to premature birth and congenital defects was about equal to the average of recent years, during which it is probable that many deaths have been returned under this heading which would formerly have been attributed to atrophy.

The tables show that the mortality of male infants was 25 per cent. higher than that of female, and this is true of most of the causes except whooping-cough. The excess in the death-rate of males was greatest in the second and third months of life, thereafter regularly decreasing. Infant mortality in the urban areas exceeded that in the rural by 28 per cent., but this excess was very unevenly distributed over the several age-groups, being only 6 per cent. in the first month, whilst it rose to 49 per cent. at 9–12 months. The chances of survival differ but little in town and country, but the noxious influences of town life soon come into play, making themselves increasingly apparent as the first years of life progress, and being especially noticeable in the second and third years, when the urban excess generally approaches 100 per cent.

The harmful effect of urban residence is conspicuous in the case of respiratory diseases generally, but especially so in regard to diarrhœa, the mortality from which disease in the towns was nearly twice as high as in the country. Syphilis shows an even greater variation with urban conditions, the mortality in the country districts, whether among legitimate or illegitimate infants, being about a quarter that of the towns. It is most fatal in the first month after birth, and afterwards progressively less so. Overlying is another cause of loss of infant life that is particularly common in great towns, the deaths from this cause being four times more numerous in London than in the rural parts of England. The mortality unsatisfactorily ascribed to "convulsions" was in London only about half that reported in the rest of the country. This accords with the opinion previously expressed concerning the superiority of death certification in the metropolis. It has often been insisted that this indefinite term, the use of which continues to show decline, should only be employed when the condition causing convulsions cannot be ascertained.

(To be concluded.)

THE BRITISH DENTAL ASSOCIATION: ANNUAL MEETING.

WAR INJURIES AND GUNSHOT FRACTURES OF THE JAWS.

THE annual meeting of the British Dental Association this year was entirely given to the consideration of practical problems connected with jaw injuries received during the war. Mr. W. H. DOLAMORE (London), the President of the Association, delivered an address, to which we call attention in a leading article.

Upon the first day

The Early Treatment of Gunshot Fracture of the Jaws

was considered.

Dr. V. H. KAZANJIAN (Harvard Surgical Unit, B.E F.) was the principal speaker. He remarked that the conditions of the present-day warfare have caused an enormous number of injuries to the head, face, and jaws. These may be of such a nature as to lead to death soon after admission to a general hospital. Dr. Kazanjian's experience is that the more common causes of these fatalities are: 1. Secondary hæmorrhage, particularly in cases where the path of the bullet is in the vicinity of large vessels. 2. Extensive inflammation and suppuration in the mouth, which, extending to the air passages, may cause septic pneumonia. 3. Extensive fracture of the upper jaw, which may involve the cranial bones and lead to intracranial infection. There are also a certain number of cases in which, owing partly to unavoidable causes and partly to lack of treatment, the following complications have been seen: The infection in the mouth may spread and cause necrosis and unnecessary additional loss of tissue. In treating patients who have fractures of the maxillæ the presence of dangerous illness may be the first consideration. As soon as the general physical condition warrants it, the proper steps are taken to re-establish normal function of the jaws and to reduce possible deformities of the face. The treatment adopted at the general hospital, where the men usually arrive within three or four days after receiving their wounds, is as follows. The patients are put to bed and given a complete rest. Free drainage is established from the external wounds; hypochlorous acid dressings with hot fomentations are applied to reduce suppuration and inflammation. Except in cases of secondary hæmorrhage or other urgent complication no attempt to suture soft parts or to set the bones, nor indeed to do any operation, is undertaken, until the initial shock and weakness have disappeared. Great attention is paid to the local condition of the mouth, the gums and teeth being painted with tincture of iodine; hourly douches of hydrogen peroxide and other antiseptic fluids are used. To facilitate the removal of pus, sputum, and dried secretions from the nose and mouth the parts are sprayed with the following solution: Ol. menth. pip., ℥ss; liq. cresolis sap. ℥ij; paraffin. liq. ʒj. Accumulations of tartar upon the teeth are thoroughly removed. At times the mouth wounds are packed with iodised gauze, which is changed very frequently. Excessive dribbling of saliva is overcome by the use of small hand pumps (or saliva ejectors) which the patient is instructed how to use. With regard to diet, the patients have generally to be fed upon liquid food, administered by means of a tube carried far back into the mouth or into the œsophagus if necessary. Nasal feeding is never used, and rectal feeding only rarely resorted to Patients fed in this manner sometimes lose weight for a week or two but after that steadily gain, even if a fluid

diet must be adhered to for a month or two. The operative procedure is as follows. Wherever possible the patient is given a rest of several days' duration before operation. At the operation, in addition to the removal of particles of shell or bullets, septic and broken teeth and loose portions of bone are removed. Regarding hæmorrhage during the operation, the path of the projectile should be carefully considered in order that all possible sources of hæmorrhage may be recognised beforehand. Dr. Kazanjian has invented a very ingenious holder for controlling hæmorrhage from the lingual artery; it consists of a piece of heavy wire about 8 or 10 inches long, bent to a U shape, with a finger of modelling composition or vulcanite rubber on each end. One end is placed in the floor of the mouth and the other externally under the chin, between the hyoid bone and the lingual side of the mandible, and the tissues are pinched at the site of fracture by the use of elastic bands about the clamp. Dr. Kazanjian also showed many ingenious splints and devices for supporting the soft tissues and hard parts. Extensive use is made of local anæsthesia to diminish the pain in fixing splints, &c. For these purposes the nerve-blocking method is chiefly employed.

Splints and Appliances.

Upon the second day the subject of appliances and splints was dealt with by Mr. MONTAGU F. HOPSON, who spoke upon the Reduction of Displaced Portions of Bone by Immediate and Gradual Methods and the Retention of Parts in Normal Position during the Period of Union. Mr. Hopson observed that everyone is agreed that the earlier some sort of splint is applied the better, and that experience has proved that the after-treatment is often much hampered by the injudicious application of external pressure by bandaging and by the premature suturing of wounds of the soft parts unless some form of intra-oral splint is inserted to maintain the fragments of fractured bones in approximately their normal relations. For immediate use in the field he suggests the well-known Hammond wire-splint, or in favourable cases bands clamped upon the teeth and united with wire bows or ligatures. These splints should always be replaced as soon as the patient arrives at the nearest hospital. As a general rule, it may be said that where there are firm teeth in each fragment a fixed splint is the more useful; on the other hand, where one or more fragments are devoid of teeth, a removable apparatus is often called for, and this may be of necessity of an inter-dental form, using the sound jaw as a basis against which the fractured fragments of the opposite jaw may be steadied. Mr. Hopson considers that splints should be constructed to conform, as far as possible, to the following general rules: (1) Simplicity; (2) a fixed splint should be aseptic and easily cleaned by irrigation; (3) sites of fractures, compound to the mouth or through an external wound, should be uncovered, both for drainage and for free irrigation; (4) a splint that of necessity covers soft tissues should be removable for cleaning; (5) splints with extra-oral attachments should be avoided, so far as possible, as they add to the discomfort of the patient.

Mr. J. E. SPILLER (London), speaking upon

The Restoration of Lost Parts by Prosthetic Apparatus,

described the method adopted by Claude Martin, of Lyons, for the construction of part of an artificial jaw in vulcanite or metal. The advantages claimed by Claude Martin in favour of immediate replacement of lost parts by artificial appliances were: (1) Diminution of sepsis; (2) fixation of the fragments; (3) prevention of retrocession of the tongue by temporary suture to the apparatus; (4) the almost immediate aid to mastication, deglutition, and speech; (5) the maintenance in position of the soft parts and the prevention of cicatricial bands; (6) suppression of the constant escape of saliva. Mr. Spiller, however, considers that Martin did not foresee (1) the large amount of sepsis and infection which are invariably present; (2) the frequency of destruction of a large amount of the soft tissues; (3) the advances in surgical methods, especially in bone-grafting. He pointed out the importance of having a firm scaffolding around which soft tissues may be built or bone grafted in, and considers that dental appliances for this purpose should be readily removable by the wearer for cleansing purposes; that they should cause no irritation or destruction of the remaining tissues; that the construction should be as simple as possible to facilitate repair at any subsequent time.

Dr. G. VILLAIN (Paris) read a paper upon

The Physiological Treatment of Fractures and Dislocations.

He pointed out that if a fractured jaw was to perform its normal function and not merely to be united in any position, a state of muscular dynamic equilibrium must be restored. Dr. Villain considers that mandibular fractures should be classified according to the causes or sources of irregularity—for example, post-elevators, inter-elevators, pre-elevators, with or without loss of substance. The study of these forces includes the investigation of the resultant of each group of forces: lowering, elevation, protrusion, retraction, lateral movement; then the examination of the resultant of forces in the combined action of all the masticatory muscles at the moment of trituration of foodstuffs. One of the examples given was that of a pre-elevating unilateral left fracture with loss of substance. In considering the resultant of forces brought to bear upon such a fracture one understands why it is that in closing the mouth the extremity of the large fragment rises more rapidly than the centre of this fragment, obliging the patient to bite in two movements—first movement, the mandible rises, pivoting on the left condyle, the teeth on the edge of the fracture-line obtain contact with their antagonists; second movement, the jaw pivots partly round this point and partly round the right condyle in order to ensure the occlusion of the intermediary teeth then making contact with their antagonists. Dr. Villain's paper was fully illustrated by pictures and diagrams, and will probably form a permanent contribution to our knowledge of this subject.

The afternoon of this day was given to the consideration of

The Restoration of Lost Portions of the Jaw by Surgical Means.

Bone-grafting was the topic round which the discussion ranged. In opening it the PRESIDENT spoke of the controversy which had arisen as to the function of the periosteum in the formation of new bone. He quoted experiments conducted in Germany by Axhausen to solve this problem. Axhausen found that living bone entirely derived of its periosteum became encysted, and that the life of the periosteum and medulla and the formation of new bone depended upon the ease with which the lymph could reach the cells. Nothing prevented this more than muscle fibres left on the bone; the thickness of the fibrous layer of the periosteum was also of great importance. At the cut margins of the periosteum the cells are immediately in contact with the lymph, whilst elsewhere this must first penetrate the fibrous layer before reaching them; also, the newly formed vascular tissue early brings to them the nourishment essential to productive activity. Hence at these cut margins there is rapid cell multiplication and early bone development. Therefore it is advised that long incisions should be made through the covering periosteum of a graft, especially where the fibrous layer of the periosteum is thick. Axhausen considers that if the ends of the graft are pointed infection is more likely to occur than in cases where it is fixed by a wire suture.

In view of the interest aroused by McEwen's work in this country these statements were very interesting. In the resulting discussion, while some speakers reported successful cases of bone grafts and all desired to see the method more widely used, on the whole the feeling seemed to be that up to the present time the results obtained were rather disappointing.

On the third day Mr. J. F. COLYER (London) opened a discussion upon

The Treatment of Ununited Fracture and Malunion.

He said that most of the cases which came under his care were those of non-union or malunion, and that it was his routine practice to have the cases radiographed immediately upon entry into the hospital and to examine them carefully for any possible septic foci. In his experience non-union is usually due to (1) sepsis; (2) undue mobility; (3) presence of foreign bodies in the wound; (4) loss of substance. In order to diminish sepsis and to lessen the risk of subsequent infection it is Mr. Colyer's practice to remove the tooth on either side of the fracture. He exhibited skiagrams in which it was clearly shown how easily organisms or their toxins may pass down the periodontal membrane and keep up infection in the bone, and he also quoted cases, which had been under treatment at various hospitals for many weeks without union occurring, in which bony union speedily ensued after the removal of septic teeth.

Mr. Colyer has often found that septic teeth lead to a spreading osteomyelitis. In treatment he always endeavours to obtain bony union, if necessary re-establishing occlusion by means of dentures at a later stage; the aim in treatment should be to fit men to return to military duty as speedily as possible. With this object, in the cases where there has been loss of bony tissue in the horizontal ramus, Mr. Colyer extracts the upper molar teeth and allows the ascending ramus on the affected side to swing forward and to unite with the horizontal ramus. This treatment results in firm bony union and restoration of good masticating power at the expense of a shortening of the horizontal ramus upon the affected side which is so slight as to be very little noticeable. With reference to appliances, Mr. Colyer avoids the use of wire splints and ligatures which may irritate the gum. He has made use of double metal Gunning splints, sometimes allowing them to be removable and sometimes fixing them with a good antiseptic cement, such as the oxyphosphate of copper. In reducing displacements he makes use of these metal splints, adjusting the upper and lower splints in the mouth so that the tissues are stretched and the displacement is partly reduced. A period of rest follows, and then the splints are again adjusted and the parts stretched until their normal relationship has been attained.

Captain H. M. HOLT, R.A.M.C., read a paper on

Diet.

Captain Holt said that diet should be considered from two standpoints—(*a*) the nutritional value of the food supplied; (*b*) the mechanical use of such food as an auxiliary in restoring the natural movements of the jaws. For this purpose four diets have been introduced, leading the patient on from a fluid to a solid diet. *A* diet is fluid, the regulation milk diet and beef-tea diet forming its basis, and such extras as arrowroot, cornflour, and semolina are introduced to give variety. *B* diet consists of minced foods, *C* of stewed foods. Beef, mutton, and stewed rabbit are mixed with finely minced vegetables and potatoes. The object of this diet is to bring gradually into work the muscles attached to the jaws without bringing too much strain to bear upon the freshly united bone. *D* diet is the ordinary diet of military hospitals; in using it a gradual transition from boiled to roast meats is carried out.

In addition to the papers there was an interesting museum containing appliances for supporting fractured jaws, torn soft parts, skin flaps, &c. This museum, which is at the house of the Royal Society of Medicine, Wimpole-street, remains open until Saturday, June 24th, and is well worth a visit.

Demonstrations were also given showing the restoration of lost parts by means of sculptural methods, by Lieutenant DERWENT WOOD, A.R.A., and by means of modified gelatine, by Dr. PONT (Lyons) and Mr. H. BALDWIN (London). Some of the reproductions of soft parts by these means are to be seen in the museum.

NOTES FROM INDIA.

(FROM OUR OWN CORRESPONDENTS.)

The Bombay Medical Act.

AMONG a variety of subjects recently discussed by the Bombay Legislative Council was an amendment introduced in the Bombay Medical Act allowing the Poona municipality to continue its aid to an Ayurvedic dispensary which had been in existence for years in that town. The Collector's ruling that under the Act it could not be supported out of the public funds had caused much dissatisfaction, and led to an animated debate in the council on the comparative merits of the indigenous and the Western systems of medicine. One honourable member flippantly observed that both the systems cured as many as they killed, adding that people managed to live in the old days, before the introduction of Western medicine, about as well as they did now. The fervour with which the indigenous system was upheld by several Indian members of the council is truly patriotic, but there is only one Ayurvedic dispensary aided by a municipality in Western India. The Government seem to have strong internal doubts as to its value. But it is very popular with the multitude, and therefore they have agreed to make a concession to popular feeling by a modification of the Act, ensuring it the continuance of municipal aid. It is as well, says the *Advocate of India*, that the Government have refrained from making the alteration in the law so comprehensive as to render it applicable to all Ayurvedic or Unani dispensaries that a municipality might choose to help, as a provision of this nature would have operated against the real well-being of the public.

Bombay Presidency Hospital.

Lord Willingdon, as President of the Bombay Branch of the Imperial Indian Relief Fund, has received the following letter from General J. G. Maxwell, Commanding the Forces in Egypt, regarding the work of the Bombay Presidency General Hospital:—

YOUR EXCELLENCY,—I cannot let the Bombay Presidency General Hospital return to India without expressing our grateful thanks for the services of this excellent unit. On Jan. 18th, 1915, this hospital of 500 beds arrived in Alexandria. On Feb. 26th, the first patients, 50 Indians from overseas, were admitted. On March 9th the hospital was temporarily converted for Europeans and utilised for the reception of Australian patients. On March 23rd the hospital was temporarily lent to the French military authorities, and remained a French hospital from that date until August 27th, 1915, when it again became British. In March it was expanded by 100 beds, and in July by 200 more, but as a matter of fact the number of beds was 875. During the period the hospital was opened it has from time to time received Indian patients from overseas and those operating in Egyptian territory. From the opening of the hospital until March 10th, 1916, the following patients were admitted: Indian, 1410; British, 1838; Australians, 498; New Zealanders 75; French, 1641; Russians, 3; total, 5463. The average number per day was 411 and the largest number on any day 873. The largest number admitted on any one day was 362 (August 25th, 1915). The above constitutes an Imperial record which the Presidency may well feel proud of, and I will be obliged if you will kindly convey this letter with our thanks to the committee for their patriotism in allowing a hospital destined for Indian patients to be used so freely for Imperial purposes.

Motor Ambulances from the United Provinces.

The United Provinces Special War Fund has already made such good progress that his Honour Sir James Meston has felt justified in consulting Sir John Hewett at home as to the steps necessary for purchasing on behalf of the people of the provinces a fleet of 50 ambulance cars.

Health of the British Troops in Delhi.

There have been a few cases of small-pox among British troops in the Delhi garrison; otherwise the health of Delhi city is good.

May 30th.

ROYAL MEDICAL BENEVOLENT FUND.

AT the last meeting of the committee, held on June 6th, 18 cases were considered and £190 were voted to 17 of the applicants. The following is a summary of the cases relieved:—

Widow, aged 40, of L.R.C.P. Edin. who practised at Cliffoney, co Sligo, and died in 1912. After her husband's death applicant opened a sweet shop in a Scottish town, and managed to get on until she had to undergo an operation in May, 1915. The Fund then made her a grant of £10. In April, 1916, her shop was blown up by a bomb from a Zeppelin, and all her stock and furniture destroyed, and she was not insured. Now wants help to re-establish herself. Voted £15.—Widow, aged 45, of L.R.C.P. Edin. who practised in the East-End of London and died in December, 1915. Applicant is partially paralysed, and was left practically unprovided for at her husband's death, and has had to live on the small sum the practice realised, of which only about £70 is left. Has one son aged 6 years. Has no home, and is staying with relatives who have promised to give all they can, which only amounts to £13 per year. Voted £10, in two instalments.—Widow, aged 38, of L.S.A. Lond. who practised in North London up to a few years ago and latterly, and up to his death in March of this year, has been taking locums. Applicant was left unprovided for with five daughters, aged 17 months to 10 years, and at present they are staying with her mother, who cannot afford to keep them. Applicant's furniture is in store with a large debt owing on it. If she could get her furniture she hopes to be able to make a living by taking in boarders. Only income £12 per annum, from a relative. An immediate special grant of £5 has been given, and the Guild are already investigating the case. Voted £12 in 12 instalments.—Widow, aged 61, of M.R.C.S. Eng. who practised at Whitechapel and died in 1913. Applicant's only income is £28 per year, the income from the investment of a life insurance, and 3*s.* per week from a son. Son-in-law used to help by paying the rent, but owing to the war has had to discontinue this, so applicant is in great difficulties. Voted £12 in 12 instalments.—Widow, aged 64, of M.D. Glasg. who practised at Glasgow and died in 1908. Applicant was left totally unprovided for, and has tried to make a living by taking in lodgers, but recently has been unsuccessful, and during the last year has only received £20 from this source. Only other income £22 from other charities. Relieved twice, £24. Voted £12 in 12 instalments.—Widow, aged 51, of L.S.A. Lond. who practised at Leicester and died in 1910. Applicant was unprovided for, with two daughters now 21 and 22 years of age, and a son now aged 14. The girls are now both working,

and pay their mother £1 16s. per week for their board and lodging. Applicant's health is bad, and she is only able to earn a little by needle-work. Owing to the high price of food finds it difficult to get on. Relieved four times, £46. Voted £12 in 12 instalments.—Widow, aged 58, of M.R.C.S. Eng. who practised at Enfield and died in 1905. Only income £37 from property, and £40 from friend. Has two daughters, one married, and the other a permanent invalid. Relieved five times, £25. Voted £5.—Daughter, aged 64, of M.R.C.S. Eng. who practised at Lydney and died in 1880. Applicant lost all her income through the action of a trustee. Only permanent income now outside help from the Fund a R.U.K.B.Assoc. pension of £21. Relieved ten times, £104. Voted £12 in 12 instalments.—Daughter, aged 52, of M R C.S. Eng. who practised at Box and died in 1894. Is a permanent invalid. Lives with two sisters, only one of whom is able to earn a little as a companion, and the other has help from the Fund and Guild and another charity. Relieved five times, £66. Voted £12 in 12 instalments.—Daughter, aged 77, of M.R.C.S. Eng. who practised at Hackney and died in 1859. Applicant lost all her capital through bad investments by trustees, and is now dependent on friends who provide £55 per annum. Relieved four times, £51. Voted £15 in 12 instalments.—Daughter, aged 64, of M.R.C.S. Eng. who practised at Liverpool and died in 1885 Applicant was left unprovided for, and acted as matron of a private home for many years at a small salary, and was unable to save, and had to retire after 60 years of age, and is now too old to undertake work. Has recently been elected to a pension of £30 from another charity. Relieved twice, £20. Voted £12 in 12 instalments.—Daughter, aged 67, of M.R.C.S. Eng. who practised in London and died in 1890. Applicant and two sisters were left unprovided for, but have tried to earn a living by taking in boarders and teaching, but of late have not been successful, and the house and furniture are in a bad state of repair. One of the sisters is also in receipt of help from the Fund. Voted £12 in 12 instalments.—Widow, aged 69, of M.R.C.S. Eng. who practised in Jamaica and died in 1884. Was left totally unprovided for at husband's death. Has three children, but none able to help. Only income a pension of £26 from a society in Jamaica and occasional help from her brother. Health very bad. Relieved 11 times, £75. Voted £12 in 12 instalments.—Daughter, aged 59, of L.S.A. Lond. who practised at Long Sutton and died in 1879. Only income £25 per annum from dividends. Acts as housekeeper without salary so as to keep together the home for the children of her late employer. Relieved once, £12. Voted £12 in 12 instalments.—Widow, aged 55, of M.R.C.S. Eng. who practised at Stockton-on-Tees and died in 1897. Applicant was left without means with two young children, one of whom is now in the army, and a daughter who is a clerk and pays 12s. a week for board and lodging. Has an army allowance of 7s. per week from son. Applicant acts as caretaker at a shop, so lives rent free. Health very indifferent. Voted 12 times, £106. Voted £9 in 12 instalments.—Widow, aged 60, of L.R.C.P. Edin. who practised at Streatham and died in 1913. Was left entirely without means, and endeavours to make a living by taking in paying guests, but has not been successful recently. Receives a little help from friends. Relieved three times, £24. Voted £1, and her case referred to the Guild for a report.—M.R.C.S. Eng., aged 49, who practised at Wigan and abroad. Health became thoroughly undermined when abroad and he had to be sent home, and has not been able to work since. Lives with an aunt who cannot afford to keep him. Relieved twice, £20. Voted £5 and referred to the Guild.

Subscriptions may be sent to the honorary treasurer, Dr. Samuel West, 11, Chandos-street, Cavendish-square, London, W.

THE SERVICES.

ROYAL ARMY MEDICAL CORPS.

Temporary Lieutenants to be temporary Captains: H. Catling and A. Griffiths. J. W. Struthers to be temporary Captain.

E. A. Bell to be temporary Honorary Captain whilst serving with No. 5 British Red Cross Hospital.

Lieutenants of the Canadian Army Medical Corps to be temporary Lieutenants: H. S. McSorley, G. H. Clement, G. B. Archer, B. W. Mosher, P. Nase, G. O. Hutchinson, and E. E. Bryans.

Temporary Honorary Lieutenants to be temporary Lieutenants: L. ap I. Davies, V. R. Hirsch, and T. Anwyl-Davies.

To be temporary Lieutenants: A. A. Halliday, A. W. McGregor, C. Harris, T. B. Shoolbread, H. G. A. Haynes, J. F. Walsh, A. Wood, W. G. Johnstone, B. C. Haller, S. N. Babington, M. J. Ahern, C. J. Todd, A. Finlay, H. A. Colwell, J. C. McMillan, L. Blake, H. J. Davidson, W. H. Harvey, E. Connell, H. H. O'Heffernan, H. L. Shelton, V. L. Connolly, G. H. Alabaster, T. E. Dobbs, W. Steadman, E. V. Beaumont, H. F. Wilson, A. E. Gravelle, A. P. Gibbons, A. J. M. Crichton, A. J. Bennee, W. P. H. Lightbody, J. C. Macaulay, and J. T. Lloyd.

To be temporary Honorary Lieutenants: W. M. Crombie, H. H. Castle, H. J. H. Symons, G. T. Symons, W. T. Warwick, A. R. Fuller, and W. Farquharson.

Temporary Lieutenant R. Dowden relinquishes his commission.

Temporary Lieutenant Arthur W. Jones relinquishes his commission on account of ill-health.

SPECIAL RESERVE OF OFFICERS.

Lieutenant (on probation) George C. L. Woodroffe is confirmed in his rank.

TERRITORIAL FORCE.

Royal Army Medical Corps.

South Midland Mounted Brigade Field Ambulance: J. McG. H. Reid, late temporary Lieutenant, R.A.M.C., to be Lieutenant.

London (City of London) Field Ambulance: Major J. A. Masters to be temporary Lieutenant-Colonel.

South Midland Field Ambulance: Captain A. A. Hingston to be temporary Major.

West Riding Field Ambulance: Major (temporary Lieutenant-Colonel) A. B. S. Stewart relinquishes his temporary rank on ceasing to command a Field Ambulance. Captain H. N. Goode to be temporary Major whilst commanding a Field Ambulance.

Wessex Field Ambulance: Lieutenant J. B. Kelly to be Captain.

London General Hospital: Major L. B. Rawling is seconded for duty with a General Hospital.

Wessex Casualty Clearing Station: A. M. Jones, late Captain, Royal Welsh Fusiliers, to be Lieutenant.

London Sanitary Company: C. G. Moor to be Lieutenant.

East Lancs. Field Ambulance: Major R. C. Rodgers is seconded for duty with a War Hospital.

West Lancs. Field Ambulance: Major J. Wood to be temporary Lieutenant-Colonel whilst commanding a Field Ambulance.

London Field Ambulance: Lieutenant E. N. Butler to be Captain.

DEATHS IN THE SERVICES.

Deputy Surgeon-General Edward Malcolm Sinclair, C.B., on June 14th, in his 85th year. He entered the service in 1854, and went to the Crimea on the outbreak of hostilities. He was present at the fall of Sebastopol, and afterwards served through the Indian Mutiny, taking part in several actions as well as the siege and capture of Lucknow. During the Transvaal campaign of 1881 he acted as principal medical officer on the lines of communication and at the base (mentioned in despatches). He retired in 1888.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

In the 96 English and Welsh towns with populations exceeding 50,000 persons at the last Census, 7959 births and 4095 deaths were registered during the week ended Saturday, June 17th. The annual rate of mortality in these towns, which had declined from 17·0 to 12·0 per 1000 in the seven preceding weeks, rose in the week under notice to 12·3 per 1000 of their aggregate civil population, estimated at 17,312,295 persons for the year 1915. During the first 11 weeks of the current quarter the mean annual death-rate in these towns averaged 14·7, against 14·2 per 1000 in London. Among the several towns the death-rate last week ranged from 3·3 in Eastbourne, 4·3 in Wallasey, 5·1 in Enfield, 5·8 in Ilford and in Warrington, and 6·5 in Coventry, to 17·7 in Burnley and in Gateshead, 18·0 in Hastings, 18·5 in Dudley, and 19·4 in Wakefield.

The 4095 deaths from all causes were 97 in excess of the number in the previous week, and included 248 which were referred to the principal epidemic diseases, against 335 and 300 in the two preceding weeks. Of these 248 deaths, 76 resulted from whooping-cough, 65 from measles, 52 from infantile diarrhœal diseases, 34 from diphtheria, 11 from enteric fever, 9 from scarlet fever, and 1 from small-pox. The annual death-rate from these diseases was equal to 0·7, or 0·2 per 1000 less than in the previous week. The deaths attributed to whooping-cough, which had been 131, 125, and 102 in the three preceding weeks, further declined to 76, and included 14 in London, 9 in Birmingham, 6 each in Liverpool and Manchester, and 4 each in Gateshead and Newport (Mon). The deaths referred to measles, which had been 85, 104, and 70 in the three preceding weeks, fell to 65, of which 18 were registered in London, 7 in Liverpool, 6 each in Manchester and Sheffield, and 5 in Birmingham. The fatal cases of diarrhœa and enteritis (among infants under 2 years), which had been 53, 58, and 63 in the three preceding weeks, fell to 52, and included 15 in London and 3 each in Birmingham and Middlesbrough. The deaths attributed to diphtheria, which had been 34, 32, and 52 in the three preceding weeks, fell to 34; 9 deaths were recorded in London, 4 in Birmingham, and 3 in Sheffield. The 11 deaths from enteric fever were 4 in excess of the average in the earlier weeks of the quarter, and included 2 in Middlesbrough. The deaths referred to scarlet fever, which had been 16, 8, and 9 in the three preceding weeks, were again 9 last week, of which 4 belonged to Birmingham. The fatal case of small-pox was registered in Cardiff.

The number of scarlet fever patients under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, which had steadily declined from 1778 to 1313 in the 10 preceding weeks, further fell to 1302 on Saturday last; 149 new cases were admitted during the week, against 161, 163, and 166 in the three preceding weeks. These hospitals also contained on Saturday last 1286 cases of diphtheria, 213 of whooping-cough, 173 of measles, 33 of enteric fever, and 1 of small-pox. The 905 deaths from all causes in London were 63 fewer than in the previous week, and corresponded to an annual death-rate of 10·9 per 1000. The deaths referred to diseases of the respiratory system, which had been 128, 117, and 130 in the three preceding weeks, rose to 137 in the week under notice.

Of the 4095 deaths from all causes in the 96 towns, 128 resulted from violence, 313 were the subject of coroners' inquests, and 1211 occurred in public institutions. The causes of 37, or 0·9 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest. All the causes of death were duly certified in Sheffield, Leeds, Bristol, West Ham, Bradford, and in 74 other smaller towns. Of the 37 uncertified causes, 7 were registered in Liverpool, 6 in Birmingham, 4 in Stoke-on-Trent, 3 each in London and South Shields, and 2 each in St. Helens and Gateshead.

HEALTH OF SCOTCH TOWNS.

In the 16 largest Scotch towns with an aggregate population estimated at 2,372,000 persons at the middle of this year, 1132 births and 555 deaths were registered during the week ended Saturday, June 17th. The annual rate of mortality in these towns, which had been 14·4, 14·7, and 12·9 per 1000 in the three preceding weeks, fell to 12·2 per 1000 in the week under notice. During the first 11 weeks of the current quarter the mean annual death-rate in these towns averaged 15·7, against 14·7 per 1000 in the large English towns. Among the several towns the death-rate last week ranged from 4·0 in Hamilton, 5·7 in Clydebank, and 6·2 in Ayr, to 13·8 in Glasgow, 16·1 in Greenock and in Motherwell, and 18·4 in Falkirk.

The 555 deaths from all causes were 31 less than the number in the previous week, and included 39 which were referred to the principal epidemic diseases, against numbers declining from 66 to 52 in the three preceding weeks. Of these 39 deaths, 17 resulted from measles, 7 from whooping-cough, 6 from scarlet fever, 5 from diphtheria, and 4 from infantile diarrhœal diseases, but not one from enteric fever or from small-pox. The annual death-rate from these diseases was equal to 0·9, against 0·7 per 1000 in the large English towns. The deaths attributed to measles, which had been 34, 26, and 13 in the three preceding weeks, rose to 17, which were all recorded in Glasgow. The deaths referred to whooping-cough, which had been 9, 10, and 9 in the three preceding weeks, fell to 7, of which 5 occurred in Glasgow. The fatal cases of scarlet fever, which had been 3, 5, and 10 in the three preceding weeks, fell to 6, and were all recorded in Glasgow. The 5 deaths attributed to diphtheria included 2 in Glasgow, and were slightly below the average in the earlier weeks of the quarter. The 4 deaths from infantile diarrhœa comprised 3 in Glasgow, and 1 in Edinburgh.

The deaths referred to diseases of the respiratory system, which had been 101, 83, and 92 in the three preceding weeks, fell to 75 in the week under notice and were 18 below the number in the corresponding week of last year. The deaths from violence numbered 14, against 34 and 20 in the two preceding weeks.

HEALTH OF IRISH TOWNS.

In the registration area of Dublin 203 births and 140 deaths were registered during the week ended Saturday, June 17th. The annual rate of mortality, which had been 19·8, 19·3, and 17·7 per 1000 in the three preceding weeks, rose to 17·8 in the week under review, against corresponding rates of 10·9 and 13·8 per 1000 in London and Glasgow respectively.

Of the 140 deaths at all ages, 26 related to infants under 1 year and 31 to persons aged 65 years and upwards. The deaths referred to the principal epidemic diseases numbered 7, and comprised 3 from infantile diarrhœa, 2 from diphtheria, and 1 each from measles and scarlet fever.

The causes of 9 deaths were uncertified, and 2 others were the subject of coroners' inquests, while 63, or 45 per cent., of the total deaths occurred in public institutions.

During the same period 163 births and 117 deaths were registered in the city of Belfast. The deaths corresponded to an annual rate of 15·1, or 1·2 per 1000 less than in the previous week, and included 15 of infants under 1 year and 22 of persons aged 65 years and upwards. The deaths from the principal epidemic diseases numbered 9, against 6 in the previous week, and included 3 from whooping-cough and 2 each from measles, scarlet fever, and infantile diarrhœa. The causes of 4 deaths were uncertified, and 2 others were the subject of coroners' inquests, while 34 of the total deaths occurred in public institutions.

Correspondence.

"Audi alteram partem."

REPORT OF THE COMMISSION ON THE DECLINING BIRTH-RATE.

To the Editor of THE LANCET.

SIR,—While agreeing to the facts set out in this report, most men and women who recognise the extreme importance of the subject will desire a clearer statement of the logical conclusion to which these facts and a knowledge of the world clearly lead. While precluded by foreign service from assisting in the preparation of this report, I beg to suggest the inevitable conclusion.

(*a*) The evidence shows that the decline of the birth-rate mainly depends on three coexisting factors—knowledge and availability of methods for restriction of the family and intention to use them. No study of causes or proposals for dealing with the problems involved is of value unless equally applied to each of these factors.

(*b*) The evidence suggests that the knowledge and availability were first developed among nations in the most quick-witted and logical—namely in France; and, subject to religious and moral scruples, have in the United Kingdom been first developed in the best-informed and well-to-do classes. The decline is then likely to continue, if other conditions remain unchanged, until these methods become known by, and available to, all classes. This extension seems certain. The intention to use these methods, however, is likely to be lacking among those who are least provident and slowest-witted.

(*c*) The intention to limit the family depends mainly on competition, and this, again, on the law of supply and demand and on freedom of communications, both in material and non-material aims, selfish and public-spirited. The two chief forms of competition affecting the welfare of nations are the military and economic. The first passes, for a time, with the advent of peace. The second has been the basis of human progress in Western communities during the past century. It is not the only basis of progress. It is directly combated by the protective policy of organised labour and by the fiscal policy of many countries.

(*d*) The countervailing forces capable of development are: (1) reduction of the standard of luxury in all classes; (2) reduction of competition, especially in the young, as a means of comparing attainments; (3) recognition of the need for population; (4) general encouragement of natural instinct and expression as opposed to deliberate intention; (5) a change of public opinion in all classes regarding the honour of successful child-bearing and child-rearing, especially as woman's form of active service to the State; (6) public recognition of this service in the terms given to public servants of all ranks, comparable to the separation allowance given to the rank and file of the navy and army in the present war; (7) encouragement of marriage amongst all public servants, including those serving abroad; (8) outspoken leadership on the part of all public men and women, especially in the schools, in recognition of this prime function of citizenship; (9) encouragement of earlier marriage; (10) limitation, as far as possible, of female responsibilities and duties to the home; direction of female education accordingly, subject to the numerical disparity in the Empire as a whole between the sexes; maintenance of the family unit under the single headship of the man.

(*e*) Evidence suggests that if any limitation of family be sanctioned there would be little actual adherence to any moral distinction between mechanical and non-mechanical, active and passive, methods for the avoidance of conception.

(*f*) Population is equally required for the furtherance of any form of activity, material, mental or spiritual; and is an essential factor in the strength, whether in quality or degree, of any community in face of competition.

(*g*) The practical steps required to give force to these considerations would be best considered by a Departmental Committee and by *ad hoc* committees to be appointed by the responsible bodies of religious communities and other leading interests concerned.

I am, Sir, yours faithfully,

F. E. FREMANTLE,
Lieutenant-Colonel, R.A.M.C. (T.).

Egypt, May 11th, 1916.

THE ETYMOLOGY OF DIABETES.

To the Editor of THE LANCET.

SIR,—My attention has just been drawn to Dr. Walter G. Smith's suggestion in his paper in your issue of June 3rd that the term diabetes is derived from the Greek for a pair of compasses on account of the straddling attitude maintained in the act of micturition. It seems somewhat futile to make fresh guesses at this question, but with respect to this proposal I should like to remind Dr. Smith that the erect and straddling attitude is not common and would be regarded by all modern oriental people as indecent. The squatting attitude is practically universal among them.

I am, Sir, yours faithfully,

Birmingham, June 16th, 1916. ROBERT SAUNDBY.

SPINAL ANÆSTHESIA AND ITS USE IN THE TRENDELENBURG POSITION.

To the Editor of THE LANCET.

SIR,—With reference to the interesting article by Mr. H. M. Page in your issue of June 10th I should like to add a few notes which confirm his good results. Mr. Page reports 70 cases, but in only 12 was the operation done without any general anæsthesia. The use of the Trendelenburg position in the production of spinal anæsthesia is not, of course, a new procedure, as it was advocated many years ago by Jonnesco and other continental surgeons, of whom Saradnicky reported 600 cases without any bad result. In the last few months I have used spinal anæsthesia in nine cases where the Trendelenburg position was employed: (1) Wertheim's operation for carcinoma uteri; (2) three cases of pyosalpinx (one of both tubes); (3) two cases of prolapsus uteri (Gilliam's operation); in one case appendicectomy also done; (4) one case of parametritis and pelvic peritonitis; (5) two cases of suprapubic prostatectomy. There were no bad effects or after-effects, except slight headache in one case. By giving a preliminary injection of morphine and atropine I have found it unnecessary to give general anæsthesia in these cases.

I note in Mr. Page's list cases of ventral hernia, intestinal obstruction, gastro-jejunostomy, ruptured liver, &c., in which I presume the Trendelenburg position was employed only for the purpose of producing anæsthesia, &c., and not for facilitating the operation, as such a position would increase the dangers and difficulties of the operation; although if such be the case I cannot quite understand the reason for waiting 15 or 20 minutes before placing the patient in the Trendelenburg position. Mr. Page does not state the site of his injection, but it is surely unnecessary to resort to the Trendelenburg position for such cases, as complete anæsthesia of the whole abdomen can be obtained usually in five minutes by injecting into the space between the twelfth dorsal and first lumbar vertebræ.

I have employed this method in many operations on the upper abdomen, such as perforated gastric ulcer, gastro-enterostomy, gastrostomy, acute intestinal obstruction, &c., with perfect anæsthesia and complete relaxation of the abdominal walls, merely raising the buttocks for a few moments until anæsthesia is produced, and keeping the head and shoulders slightly raised all the time, thus obviating the danger of respiratory failure. In using the dorso-lumbar method for operations in the upper abdomen Jonnesco kept the patient in the sitting position for a few minutes, and afterwards in the dorsal position with the head raised, only resorting to the Trendelenburg position for a few minutes when the anæsthesia was incomplete. I have seen no bad effects, however, from placing the patient in the dorsal position immediately after the injection, and the anæsthesia is surer and produced sooner.

It was pointed out by Jonnesco that injection in the dorso-lumbar space gave a more perfect anæsthesia than in the classical site between the third and fourth lumbar vertebræ, and I am convinced that the percentage of failures requiring general anæsthesia is much less if one employs the higher site, while I have had no bad effects in over 100 cases where I have used this method. I ought, however, to add that for injections in the dorso-lumbar space I invariably use a mixture of strychnine and stovaine (average dose 6 cgr. stovaine and 1 mgr. of strychnine prepared in ampoules by Martindale) as originally advocated by Jonnesco. For operations in which the Trendelenburg position is employed the addition of strychnine seems especially desirable to obviate the risk of respiratory failure.

I am, Sir, yours faithfully,

A. G. STEWART.

Paddington Infirmary, Harrow-road, W., June 14th, 1916.

THE EFFECT OF FERRIVINE AND INTRAMINE ON SYPHILIS.

To the Editor of THE LANCET.

SIR,—I cannot help drawing attention to the fact that Lieutenant-Colonel L. W. Harrison and Mr. C. H. Mills, like all those who have criticised my research work on syphilis, having repeated none of it themselves, go to such pains to attempt to convince their readers that they are unprejudiced. Why is this necessary, other than for the reason that they are biassed throughout? So far as the clinical part of the article written by Colonel Harrison and Mr. Mills in your issue of to-day's date is concerned, all I need say in answer to it is that I should not be using ferrivine and intramine every day if I was not firmly convinced that my patients were gaining advantages unobtainable with other existing remedies. That men who have had a scientific training should assume that my work on the Leucocytozoon syphilidis is incorrect because no biologist of standing has repeated the work is incomprehensible. Are both Colonel Harrison and Mr. Mills ignorant of the fact that the longer a view in medicine takes to be accepted the more correct it is, and *vice versa?*—medical history teems with instances. Furthermore, why do not Colonel Harrison and Mr. Mills repeat the work themselves? It may be taken for granted that, had a biologist of standing repeated the work and found it wanting, he would not have emulated the authors by rushing into print to proclaim the fact with so little experience as that forming the basis of the article in question. Whatever eminent chemists may say in private to Colonel Harrison and Mr. Mills is no concern of mine, but as they publicly state that eminent chemists have confessed themselves unable to understand my chemistry, I must ask them, in the interests of science, to be so kind as to ask these chemists to come forward and publicly draw attention to the statements which bewilder them.

I am, Sir, yours faithfully,

Wimpole-street, W., June 17th, 1916. J. E. R. MCDONAGH.

Obituary.

RONALD EDWARD STEWART KROHN, M.D. LOND.

Ronald E. S. Krohn, second son of Nicholas Krohn, was educated at University College School and took his medical course at University College Hospital, obtaining the M.D. of London University in 1892. Soon after starting in general practice in Hampstead some threatening of lung trouble appeared which made it advisable for him to leave London. He therefore settled in Madeira, where he worked up an extensive surgical practice, largely amongst the Portuguese. During this time he was working at very high pressure, and after eight years his health completely broke down and he was obliged to leave Madeira. He then went to Switzerland, where he assisted in starting the Wald-sanatorium, Arosa, his great powers of organisation being of service in putting the institution on a sound footing. Unfortunately, the disease progressed in spite of all precautions, and after a year or two in England, where Dr. Krohn devoted himself to the translation of medical works, he returned to Switzerland and died on May 5th in the sanatorium which he had helped to start, aged 48 years.

Dr. Krohn was possessed of a charming personality and was loved by his patients and many friends, and although for the last ten years of his life he was in very failing health, he was always cheerful and busy. He never spared himself, and as his limitations became more marked he never lost his pluck and remained to the last an example and incentive to his friends. He leaves a widow and four children, his second son having been killed in action at Festubert.

The War.

THE CASUALTY LIST.

THE following names of medical officers appear among the casualties announced since our last issue:—

Died.

Lieutenant E. H. Flanigan, R.A.M.C., was educated at Dublin and qualified in 1908. Before joining the R.A.M.C. he was in practice in Southern Rhodesia.

Wounded.

Captain C. H. Maskew, R.A.M.C.

Captain J. H. F. Perras, Canadian A.M.C., attached to the Canadian Infantry.

Captain W. L. Shannon, Canadian A.M.C., attached to the Canadian Infantry.

Captain N. MacLeod, Canadian A.M.C.

Previously reported believed Prisoner at Kut-el-Amara, now reported not a Prisoner.

Captain R. K. Mallam, R.A.M.C.

THE VICTORIA CROSS.

The King has conferred the Victoria Cross upon—

Captain John Alexander Sinton, I.M.S.

For most conspicuous bravery and devotion to duty.

MENTIONED IN DESPATCHES.

The names of medical officers who have been brought to notice for gallant and distinguished conduct in the field are mentioned in a despatch received from General Sir Douglas Haig, C.B., Commander of the British Forces in France, dated April 30th, 1916:—

Staff, &c.

Bt.-Col. M. H. G. Fell, R.A.M.C.; Maj. A. C. Geddes, O.T.C.; Col. J. J. Gerrard; Col. W. T. Swan, C.B., A.M.S.; Surg.-Maj. R. M. Cowie, 1st Life Guards; Surg.-Capt. E. J. H. Luxmoore, 2nd Life Guards; Maj. G. W. K. Crosland (combatant); and Lt.-Col. (Hon. Col.) Sir J. R. A. Clark, Bart., C.B., St. John Amb. Brigade.

Army Medical Service: General Headquarter Staff, &c.

Surg.-Gen. R. H. S. Sawyer, C.M.G.; Col. H. Carr, C.B.; Col. W. L. Gray; Col. O. R. A. Julian, C.M.G.; Col. C. J. Macdonald; Col. F. J. Morgan; Col. F. R. Newland; Col. H. I. Pocock; Col. H. N. Thompson, D.S.O.; Col. S. Westcott, C.B., C.M.G.; Col. J. B Wilson; Col. R. W. Wright; Lt.-Col. (temp. Col.) F. C. Buswell; Lt.-Col. (temp. Col.) H. N. Dunn, R.A.M.C.; Lt.-Col. (temp. Col.) J. D. Ferguson, D.S.O., R.A.M.C.; Lt.-Col. J. V. Forrest, R.A.M.C.; Lt.-Col. J. S. Gallie, R.A.M.C.; Lt.-Col. (temp. Col.) F. W. Hardy, R.A.M.C.; Lt.-Col. H. C. R. Hime, R.A.M.C.; Lt.-Col. (temp. Col.) E. W. Slayter, R.A.M.C.; Lt.-Col. (temp. Col.) H. S. Thurston, C.M.G., R.A.M.C.; Maj. H. H. A. Emerson, R.A.M.C.; Maj. L. R. V. Foster, R.A.M.C.; Maj. W. R. P. Goodwin, R.A.M.C.; Maj. P. H. Henderson, R.A.M.C.; Maj. D. O. Hyde, R.A.M.C.; Maj. E. T. Potts, D.S.O., R.A.M.C.; Capt. A. H. Heslop, R.A.M.C.; Capt. W. B. Purdon, R.A.M.C.; Temp. Col. A. Fullerton; and Col. A. L. F. Bate.

Royal Army Medical Corps.

Lt.-Col. E. A. Bourke; Lt.-Col. A. W. N. Bowen; Lt.-Col. O. W. A. Elsner; Lt.-Col. J. G. Gill; Lt.-Col. J. Grech; Lt.-Col. H. Hewetson; Lt.-Col. W. J. Taylor; Lt.-Col. A. G. Thompson; Temp. Lt.-Col. G. N. Stephen; Maj. (temp. Lt.-Col.) J. H. Brunskill; Maj. B. S. Bartlett; Maj. E. A. Bryden; Maj. T. S. Coates; Maj. (temp. Lt.-Col.) R. F. M. Fawcett; Maj. A. C. H. Gray; Maj. (temp. Lt.-Col.) R. C. Hallowes; Maj. (temp. Lt.-Col.) W. J. S. Harvey; Maj. A. J. Hull; Temp. Maj. T. C. L. Jones; Maj. W. D. C. Kelly; Maj. P. J. Marett; Maj. (temp. Lt.-Col.) W. G. Maydon; Maj. (temp. Lt.-Col.) A. C. Osburn; Maj. H. G. Pinches; Maj. (temp. Lt.-Col.) A. McG. Rose; Maj. H. G. Smeeth (Spec. Res.); Temp. Maj. A. E. Webb-Johnson; Maj. C. F White; Maj. J. H. R. Winder; Maj. (temp. Lt.-Col.) B. F. Wingate; Capt. W. J. Adie (Spec. Res.); Capt. W. M. Biden (Spec. Res.); Capt. S. McA. F. Cesari (Spec. Res.) (killed); Temp. Capt. A. B. Cheves; Capt. D. B. Chiles-Evans (Spec. Res.); Temp. Capt. H. J. Couchman; Capt. G. H. Dive; Capt. D. Dougal (Spec. Res.); Capt. T. I. Dun (Spec. Res.); Capt. G. B. Edwards; Temp. Capt. R. D. Fitzgerald; Temp. Capt. C. Y. Ford; Temp. Capt. J. H. Fletcher; Capt. W. R. Gardner (Spec. Res.); Temp. Capt. A. C. Giles; Temp. Capt. A. S. Glynn; Capt. R. A. Greenwood (Spec. Res.); Temp. Capt. S. Gurney-Dixon; Temp. Capt. A. C. Hancock; Temp. Capt. T. L. Hardy; Temp. Capt. H. M. Hart-Smith; Temp. Capt. C. Kingston; Temp. Capt. H. O. Lindsay; Capt. A. T. Logan (Spec. Res.); Temp. Capt. N. P. L. Lumb; Temp. Capt. J. B. McCabe; Temp. Capt. D. J. McRae; Capt. D. C. Macdonald (Spec. Res.); Temp. Capt. E. L. Mackenzie; Temp. Capt. E. S. Marshall; Capt. W. C. B. Mever (Spec. Res.); Capt. W. A. Miller (Spec. Res.); Temp. Capt. D. C. Monro; Capt. R. Montgomery (Spec. Res.) (killed); Temp. Capt. H. Moore; Temp. Capt. J. W. Pell; Capt. A. C. Perry (Spec. Res.); Temp. Capt. K. Playfair; Capt. L. T. Poole; Capt. H. C. D. Rankin; Temp. Capt. E. L. Reid; Capt. A. L. Robertson (Spec. Res.); Temp. Capt. H. H. Robinson; Capt. H. E. Rose (Spec. Res.); Capt. J. Rowe; Capt. W. C. Smales; Temp. Capt. W. A. Sneath; Capt. H. N. Stafford (Spec. Res.); Temp. Capt. J. L. Stewart; Capt. A. D. Stirling; Temp Capt. A. Stokes; Capt. G. P. Taylor; Temp. Capt. W. A. Taylor; Capt. A. M. Thomson (Spec. Res.); Capt. P. Thornton (Spec. Res.); Temp. Maj. J. C. Webb; Temp. Capt. T. H. Whittington; Temp. Capt. C. McM. Wilson; Capt. J. L. Wood; Temp. Capt. E. White; Temp. Capt. D. H. D. Wooderson; Temp. Capt. P. R. Woodhouse; Capt. W. G. Wright; Temp. Lt. F. J. Blackley; Temp. Lt. W. E. Burrows; Temp. Lt. A. J. W. Cunningham; Temp. Lt. A. J. Cunningham; Temp. Lt. J. P. Musson; Temp. Lt. E. T. Pinhey; Temp. Lt. C. L. G. Powell; Temp. Lt. R. R. Scott; Temp. Lt. H. D. Smart; and Temp. Lt. T. Strain.

Royal Army Medical Corps (Territorial Force).

Bt.-Col. and Brig.-Surg. C. E. Harrison, C.V.O. (ret. pay); Lt.-Col. J. Clay, Northumb. Casualty Clearing Station; Lt.-Col. J. McKinnon, W. Rid. Fd. Amb.; Lt.-Col. W. P. Peake, N. Mid. Casualty Clearing Station; Maj. (temp. Lt.-Col) R. M. West, N. Mid. Fd. Amb.; Lt.-Col. E. A. Wraith, N. Mid. Fd. Amb.; Surg.-Maj. A. W. Cuff, W. Rid. Brig., R.F.A.; Capt. (temp. Maj.) E. F. Finch, W. Rid. Fd. Amb.; Lt. (temp. Maj.) A. C. F. Turner, N. Mid. Fd. Amb.; Capt. H. M. Calder, Lond. Fd. Amb.; Capt. (temp. Maj.) W. Cowie, Lond Fd. Amb.; Capt. (temp. Lt.-Col.) H. K. Dawson, Lond. Fd. Amb.; Capt. N. A. Dore, Lond. San. Serv.; Capt. S. S. Greaves, W. Rid. Fd. Amb.; Capt. S. J. C. Holden, W. Lanc. Fd. Amb.; Capt. M. P. Inglis (Spec. Res.); Capt. A. E. Ironside, Lond. Fd. Amb.; Capt. R. Jacobs, Lond. San. Serv.; Capt. G. G. Johnstone, Lond. San. Serv.; Capt. C. D. Law, attached S. Lanc. R.; Capt. J. P. Mathews, W. Rid. Fd. Amb.; Capt. J. Miller, N. Mid. Fd. Amb.; Capt. F. J. J. Ney, Lond. San. Serv.; Capt. H. G. A. Pearson, Lond. San. Serv.; Lt. (temp. Capt.) J. E. Sandilands, Lond. Fd. Amb.; and Capt. G. A. Sutcliffe, Northumb. Casualty Clearing Station.

Canadian Army Medical Corps.

Lt.-Col. (temp. Col.) G. La F. Foster, C.B.; Lt.-Col. (temp. Col.) J. T. Fotheringham; Lt.-Col. R. P. Campbell; Maj. J. A. Amyot; Maj. A. C. Rankin; Maj. A. E. Snell; Capt. J. A. Crozier; Capt. H. B. Jeffs; Capt. J. S. Jenkins; and Capt. G. C. Hale.

Indian Medical Service.

Maj. E. A. C. Matthews, V.H.S.; Capt. R. I. Binning; Capt. W. B. A. K. Cullen; Capt. P. K. Gilroy; and Capt. J. G. B. Shand.

Indian Subordinate Medical Department.

No. 1289 1st Class Sub-Asst. Surg. Kunniyal Raman; Asst. Surg. W. E. Moody; 2nd Class Sen. Sub-Asst. Surg. Nabi Ahmad Sidiqi; No. 3 2nd Class Sub-Asst. Surg. J. Rafiud-Din Khan; and 3rd Class Sub-Asst. Surg. E. J. Pell.

In despatches received from General Sir John Maxwell and Major-General Sir A. Wilson, dealing with the military operations in Egypt from November, 1914, to March, 1916, reference is made to the work of the 137th Field Ambulance:—

Major R. M. Knox, I.M.S., and his officers were energetic and expeditious in the disposal of the large number of wounded on their hands.

The names of the following medical officers are mentioned:—

Staff, &c.

Lt.-Col. H. Burden, C.I.E., I.M.S.; Maj. J. D. Graham, I.M.S.; Capt. S. W. Jones, I.M.S.; Lt.-Col. (temp. Col.) W. H. B. Robinson, C.B., I.M.S.; Lt.-Col. Sir D. Semple, Dir.-Gen. of Dept. of Pub. Health; Dr. J. Cresswell, i/c. Govt. Hosp., Suez; Dr. W. C. Hayward, i/c. Govt. Hosp., Port Said; Maj. G. W. Heron, R.A.M.C., Health Off., Suez Canal Area; Dr. L. Cambolin, Med. Off., Suez Canal Co., Ismailia; Lt.-Col. E. P. Sewell, R.A.M.C., A.D M.S.; Surg.-Maj. and Hon. Surg. Lt.-Col. R. Bullock, T.D.; Surg.-Gen. R. W. Ford, C.B., D.S.O., D.M.S.; Col. T. B. Beach, A.M.S.; Surg.-Maj. B. Pares, D.S.O.; Maj. H. V. Bagshawe, R.A.M.C., A.D.M.S.; Lt.-Col. Sir J. Rogers, K.C.M.G., D.S.O., A.M.S.; Maj. C. S. Spong, D.S.O.; Local Maj. W. Hastings; Local Maj. E. V. Oulton; Local Maj. A. F. MacCallan; Local Maj. W. Hayward; Local Maj. C. Elkins; Local Maj. L. P. Phillips; H. V. Keatinge, C.M.G.; J. E. Cresswell; Armand Ruffer, C.M.G.; A. Granville.

Medical Services, A.M.S., and R.A.M.C.

Lt.-Col. W. G. Pridmore, C.M.G., I.M.S., No. 5 Ind. Genl. Hosp.; Lt.-Col. J. B. Smith, I.M.S., Bombay Pres. Genl. Hosp.; Lt.-Col. P. J. Lumsden, I.M.S., No 8 Ind. Genl. Hosp., Cairo; Maj. T. B. Kelly, I.M.S., 105th Ind. Fd. Amb.; Maj. W. R. Battye, D.S.O., I.M.S., 108th Ind. Fd. Amb.; Maj. W. D. Ritchie, I.M.S.; Capt. R. H. Bharucha I.M.S.; Maj. J. N. Walker, I.M.S., 108th Ind. Fd. Amb.; Capt. C. H. Fielding, I.M.S., 89th Punjabis; Col. C. W. R. Healey; Col. F. W. G. G. Hall; Temp. Col. F. D. Bird; Lt.-Col. O. L. Robinson; Lt.-Col. H. E. R. James, C.B.; Maj. J. M. Darling; Maj. A. N. Fraser; Maj. C. P. Thomson; Temp. Maj. C. C. Choyce; Temp. Maj. W. T. Prout, C.M.G.; Capt. R. E. Todd; Capt. H. W. Carson; Capt. E. C. Lambkin; Capt. W. W. Treves; Capt. C. Robb; Capt. S. W. M. Jones (Spec. Res.); Capt. E. J. Bradley (Spec. Res.); Temp. Capt. G. Blacker; Temp. Capt. S. A. Boyd; Temp. Lt. J. G. Willmore; Lt.-Col. A. H. Lister, 1st Scot. Gen. Hosp.; Capt. E. W. H. Groves, 2nd Southern Gen. Hosp.; Capt. D. G. Kennard; Capt. C. Carr, 1st Scot. Gen. Hosp.; Capt. W. R. Douglas, E. Lancs. Divl. Fd. Amb.; Lt. (temp. Capt.) G. R. Rickett; Lt.-Col. (temp. Col.) C. Stonham, C.M.G. (deceased); Lt.-Col. (temp. Col.) A. H. Tubby; Maj. (temp. Col.) A. W. Mayo Robson, C.V.O.; Capt. (temp. Col.) V. W. Low; Capt. (temp. Col.) Sir V. A. H. Horsley; Lt.-Col. A. R. Tweedie; Lt.-Col. T. H. Forrest; Maj. C. P. Thomson; Capt. W. A. Brechin; Capt. G. E. J. A. Robinson; Maj. (temp. Lt.-Col.) F. H. Francis.

Australian and New Zealand Forces.

Maj. and Hon. Lt.-Col. J. G. Tedder, Australian A.M.C.; Col. (Hon. Surg.-Gen.) W. D. C. Williams, C.B.; Lt.-Col. G. T. Hall, N.Z.A.M.C.; Temp. Lt. J. W. O'Brien, 1st Aust. Div. Train.

Canadian A.M.C.

Lt.-Col. F. Hetherington, C.M.G.; Lt.-Col. H. R. Duff (deceased); Capt. G. E. Kidd.

In a despatch received from Lieutenant-General Smuts, Commander-in-Chief of the East African Force, dated April 30th, 1916, and dealing with the British campaign in East Africa, the following reference is made:—

Exceptionally heavy work has been thrown upon medical officers and personnel. All wounded have been treated and evacuated expeditiously, and the number of sick who passed daily through the hands of the medical authorities, more especially since the cessation of active operations, has been very great. Great credit is due to Surgeon-General G. D. Hunter, C.M.G., D.S.O., and his assistants.

OBITUARY OF THE WAR.

ARCHIBALD ALEXANDER MORISON, M.B., CH.B. EDIN.,

SURGEON, ROYAL NAVY.

Surgeon A. A. Morison, who was lost on board H.M.S. *Indefatigable* in the naval action on May 31st at the age of 29 years, was born in Bengal, where his father was a medical missionary. He was educated at George Watson's College and the University, Edinburgh, where he was Beaney prizeman in surgery and anatomy and obtained a medal in anatomy. After graduation he held resident posts at the Royal Maternity Hospital and the City Hospital, Edinburgh, as well as at the Brook Hospital, Woolwich. At an early stage of the war he offered his services and became a temporary surgeon in the navy, attached to H.M.S. *Indefatigable* until his death.



Surgeon Morison was well known in Scotland as a footballer. He was an invaluable full back for the successful Watsonian XV., and in recent days was a prominent player in naval matches. A medical friend writes of him: "What Morison was on the football field—resolute, resourceful, reliable, and reckless ever of his own safety—he proved to be in his ordinary walk of life. Calls of duty and honour, and they were various, were straightway answered with a natural self-effacement. If his friends relied on him he did not fail them."

CYRIL OSCAR HOWE JONES, M.R.C.S. ENG.,

SURGEON, ROYAL NAVY.

Surgeon C. O. H. Jones, who was killed on board H.M.S. *Invincible* in the recent naval action at the age of 25 years, was educated at Walthamstow Technical School and London University, entering the medical school of Middlesex Hospital. He afterwards won an entrance scholarship to St. Thomas's Hospital, where he completed his studies, winning prizes in forensic medicine, public health, and insanity. After qualifying in 1915 he was appointed house physician, but resigned in August on obtaining a commission in the navy as surgeon to H.M.S. *Invincible*, on which he remained until his death.



Surgeon Jones was a good all-round sportsman, but it was at Association football that he really excelled. He played consistently for his hospital team during four exceptionally successful seasons, and was also a regular member of the United Hospitals team. In 1913 he gained his amateur International cap by representing Wales against England in the A.F.A. Internationals. A medical colleague writes of him: "His true sense of duty, his untiring energy in all he undertook, and his hearty disposition endeared him to all his comrades. His death has robbed many of a sincere friend, and deprived his profession of one of its most ardent members." Surgeon Jones was unmarried.

GEORGE BASSETT MOON, L.R.C.P. & S. EDIN.,

SURGEON, ROYAL NAVY.

Surgeon G. B. Moon, who was killed in action in the North Sea on May 31st, was 30 years of age and the son of Mr. George D. Moon, L.R.C.P. Edin., police surgeon to the county borough of Derby. He was educated at Derby Grammar School and matriculated at Birmingham University, studying medicine there and at Edinburgh. After qualifying in 1909, he was appointed assistant medical officer to the Kent County Asylum at Barming Heath, remaining there for five years until the outbreak of war, when he applied for a commission in the navy, and was gazetted as temporary surgeon in December, 1914.



Apart from his medical work Surgeon Moon took a great interest in athletics. He was a keen, all-round sportsman, representing his University at Association football, and at the asylum was a prominent member of the cricket eleven.

His chief writes of him: "He was sympathetic and unfailing in his attentions to all under his care, and his death caused great regret to both patients and staff of the asylum, where he had spent the major portion of his short medical career."

HUGH FRANCIS McNALLY, M.B., B.CH. BELF.,

SURGEON, ROYAL NAVY.

Surgeon H. F. McNally, who was on H.M.S. *Hampshire*, which sank on June 5th, was 24 years of age, and the son of Mr. Nicholas McNally, of Portaferry, co. Down. He was educated at Conway Street National School, where his father was principal, and studied medicine at the Queen's University of Belfast, qualifying in 1915. Whilst at college he was an active member of the Officers Training Corps, and was later in charge of the Belfast Regiment of the National Volunteers, with the rank of lieutenant-colonel. Resigning his commission on obtaining his degree, he made two voyages as a ship's surgeon and then obtained a temporary commission in the navy. Surgeon McNally had a natural aptitude for literature and natural history, excelling at these rather than at field sports. A friend writes of him: "His character was of the gentlest, and he had a happy knack of making fast friends wherever he went. His intercourse with fellow-students and patients was characterised by courtesy and kindliness."



PENRY GARNONS WILLIAMS, M.R.C.S. ENG.,

FLEET-SURGEON, ROYAL NAVY.

Fleet-Surgeon P. G. Williams, who was on board H.M.S. *Hampshire*, which was lost on June 5th, was 42 years of age and the sixth son of the late Prebendary Garnons Williams, of Abercamlais, Brecon. He was educated at Uppingham and St. Thomas's Hospital Medical School, qualifying as M.R.C.S. in 1899 and entering the navy soon after. He saw varied service in this country and on the North American and China Stations, receiving promotion to staff-surgeon in 1907 and to fleet-surgeon in 1915. A hospital contemporary writes of him: "He was one of the very best of friends, kind-hearted, and always anxious to do a good turn. He loved his work and was conscientious and capable. On land he was a keen sportsman, being especially fond of shooting and fishing" Fleet-Surgeon Williams married in 1907 Teresa, daughter of Walter Pike, of Plymouth, to whom and to his many friends we tender our sympathy.

AUXILIARY ROYAL ARMY MEDICAL CORPS FUNDS.

A general meeting in support of the creation of these funds will be held at the Royal Army Medical College, Millbank, on Monday afternoon next, at 2.45 P.M., over which Sir Alfred Keogh will preside. The Provisional Committee, whose names were notified in THE LANCET last week, have formulated a scheme the proposals under which will be discussed at the meeting. It is suggested that two independent funds be formed, one, a benevolent fund for officers' orphans, the other a relief fund for the widows and orphans of the rank and file of the Auxiliary Royal Army Medical Corps Forces; and that both Funds, embracing the three auxiliary branches of the corps—namely, the Special Reserve, the Territorials, and those holding Temporary appointments—shall be administered by one committee representative of the three branches.

Officers' Benevolent Branch.—The Provisional Committee recommend that this fund shall adopt the rules of the Royal Army Medical Corps Officers' Benevolent Society, as far as they are applicable. The object of the Officers' Benevolent Branch will be to afford pecuniary assistance to the orphans of officers who have held commissions in the Auxiliary Branches of the Royal Army Medical Corps during this war and who are in necessitous circumstances, the more especially to assist in the education and the starting in life of the orphans. The orphans of those officers who have been killed in action or have died of wounds received in action or of diseases caused by active service will have precedence; the orphans of officers who die after the war or after relinquishing their commissions and whose deaths are directly attributable to war service will have the second call on the Fund; and the orphans of officers who have held commissions during the war period but whose deaths are not directly attributable to war service will have the last claim; the orphans of officers who are non-subscribers to the Fund not being, of course, considered. It is proposed to make all grants in the form of donations, all claims being decided annually on their individual merits; and as the Officers' Benevolent Branch will have to be maintained entirely by subscriptions and donations, it is hoped that every officer of the Auxiliary Royal Army Medical Corps will at once become a subscriber, and that those able to do so will give a donation to assist in starting the Fund. The minimum subscription, it is proposed, should be one guinea per annum.

Relief Fund.—The object of this Fund is to assist the widows and orphans of the rank and file of the Auxiliary Branches of the Royal Army Medical Corps, and it will be worked, as far as possible, on the lines of the General Relief Fund of the Royal Army Medical Corps. As the maintenance of this Fund will have to depend chiefly, if not entirely, on donations and grants, and as on demobilisation all grants from regimental institutes will naturally cease, the Provisional Committee consider that an endeavour should at once be made to raise a large sum of money so as to place the Fund in receipt of an income from investments.

Loan Fund.—At a meeting of the Provisional Committee held on June 15th it was resolved:—

To recommend the general meeting to appoint a committee to report to a further meeting on the possibility of the establishment of a Loan Fund to help medical officers of the Auxiliary Forces who are in temporary difficulties on returning to their civil practices.

This proposal will also be discussed.

PHYSICAL TREATMENT AT THE GRANVILLE CANADIAN SPECIAL HOSPITAL.

Lieutenant-Colonel L. Watt, of the Canadian Army Medica Corps, has sent us the following interesting report on the physical treatment of disabled soldiers and some of its results at the Granville Canadian Special Hospital:—

The position of the Canadian Expeditionary Force is an anomalous one in that, as far as Canada is concerned, England is as much overseas as France. This has caused difficulty in regard to the treatment of cases requiring prolonged hospital care, with the expectation of these being eventually made fit for service again. It did not seem wise to return these men to Canada on account of the expense and also of their loss to the Expeditionary Force, and for this reason it became imperative to establish a special hospital for their treatment, which was opened on Nov. 22nd, 1915. This treatment naturally falls into two distinct lines, the one "Medical," the other "Physical," and it is with the latter that this report has to deal.

The physical treatment of patients is what one might term the reverse side and the medical treatment the obverse side; each is incomplete without the other, but when combined they unite to form a more or less perfect result, depending upon the amount of damage previously incurred in wear and tear. In a special hospital of this kind, devoted almost entirely to organic and functional nerve lesions and nerve diseases of all kinds and orthopædic treatment and surgery, the patients are, even before arrival, all more or less hospitalised. They have spent weeks, and even months, in one or more hospitals; they are tired of the unaccustomed irksome restrictions, the hospital uniform, the enforced temperance, and, above all, the wearisome idleness. As the restrictions of military discipline must be maintained at all costs, our first aim is to make the patient capable of doing *something* as quickly as possible.

During his period of "passive" treatment the patient is in every way made to feel that he is here for one definite purpose—i.e., to get well. He is first thoroughly examined by his own medical officer, then sent to our specialist board, who, in consultation with the medical officer, re-examine him and prescribe the treatment most suitable for his condition; this may be massage, electricity, ionization, radiant light and heat, arc-light bath, high frequency, auto-condensation, electric water bath, Turkish vapour bath, "eau courante" baths, or plunge, shower, and douche baths. Approximately 10,000 treatments were given in the month of March in this department alone. He is sent back to this board at regular intervals until judged to be fit for "light duty." Everything that can possibly help to elucidate his condition is available. These include X rays, bacteriology and pathology, and all apparatus for electrical reactions, each department being under a trained specialist. The patient is kept as much as possible in the open within certain prescribed areas in order to get the maximum of sunshine and fresh air, and every evening a concert is given in the large recreation hall.

With the initials "L. D." on his case-sheet his opportunity has arrived. He is given some definite work suitable to his condition and allowed to wear "khaki," with, of course, the blue armlet sewn on the sleeve to indicate that he is still a patient. This wearing of "khaki" is considered a great privilege and carries with it certain definite advantages—greater freedom in leaving hospital precincts and longer hours of "pass." If the privilege is abused the patient is returned to "blues" immediately. Unquestionably this is an important factor in rapidity of cure: men who were previously listless and chronic grumblers quickly become keen and enthusiastic. It is to be noted that daily treatments are continued throughout the whole of a man's stay in hospital, whether on light duty or not.

Our cases now naturally fall into two main classes—*gymnastic and general*. The gymnastic cases are transferred to a special wing, and are under the direct supervision of the surgeon-in-chief. To assist him four instructors are employed, divided as follows: (1) individual cases, (2) small special classes, (3) large gymnasium class, (4) Swedish exercise classes. The patients naturally graduate from one class to another as their powers increase.

1. *Individual cases.*—Special apparatus of various kinds is provided for the exercise of all joints and muscles of the trunk, upper and lower extremities. These exercises are all of the "active" type, and each case is personally supervised by the instructor.

2. *Small special classes.*—These are subdivided into the following: (*a*) Quadriceps, (*b*) tibials, (*c*) shoulder girdle, (*d*) back and elbow, (*e*) wrist, and the exercises most suitable to each are employed.

3. *Large gymnasium class.*—All the ordinary apparatus found in a fully equipped gymnasium is available and employed.

4. *Swedish exercises class.*—This class is as far as possible held in the open on a large cement quadrangle, which permits it being available almost every day. A careful record is kept of all absentees, and the number of wilful absences is less than ½ of 1 per cent., a remarkable tribute to the keenness of the patients.

In addition, marching parades are held daily, whereby advanced patients are marched definite distances under proper military discipline. As a corollary, special apparatus is being constructed for the training of men with artificial limbs, such as gangways which can be lifted and lowered, and on which obstacles at varying heights can be placed at will.

This brings us to a consideration of the so-called "general" group. It may be roughly subdivided into: (1) Hospital duties, (2) arts and crafts, (3) entertainments, (4) games.

1. *Hospital duties.*—These include clerical work (very suitable for shock cases); fatigues, such as polishing brass and linoleum, dusting, sanitary, kitchen, post-office (very suitable for arm cases); dining room and ward work, telephones, lifts, ambulance orderlies (very suitable for leg cases); outside guard, town military police, patients' parades (very suitable for non-commissioned officers).

2. *Arts and crafts.*—Machine shops: These are capable of employing 24 men. We are now manufacturing practically all our own splinting apparatus, doing all repair work in connexion with our motor transport; making many small things required daily in some part or other of the hospital. As subsidiaries at least twelve patients are employed in electrical repairs, plumbing, and tinsmithing. Forge: This employs four men, who work in connexion with machine shop. Carpentry shop: This employs at present twelve men, who are all kept fully occupied by the numerous bits of work required in a hospital which has been enlarging steadily by the addition of new buildings. We hope soon to have a full equipment, power-driven, for wood-turning, fret-sawing and cabinet-making of all kinds. When this is installed, it is our intention to work along definite lines, and we will thus employ a larger number of patients. Subsidiaries, such as painting, kalsomining, and decorating, employ another eight patients. Printing shop: This employs six men; all special forms required for hospital use are printed here. In addition a small newspaper of four pages is printed weekly, under the supervision of an editorial and business staff, the former composed of representatives from staff, personnel, and patients. Boot shop and saddlery: This employs six men, who do all ordinary repairs, and in addition make the many necessary modifications of boots required by the orthopædic surgeons and the strappings and linings of the various kinds of splints. Wood carving: This should employ at least 12 men, and will soon be actively going, as we now have an officer fully qualified in this special branch. Gardening: This employs 24 men, who are now busily occupied in preparing the grounds for potato and seed planting. Landscape gardening: This employs 12 men, who are employed in clearing grounds, laying walks, trimming shrubbery, and preparing grounds for various games.

3. *Entertainments.*—Through the kindness of the Canadian Red Cross Society in furnishing the instruments, an orchestra of 15 pieces has been formed, composed entirely of patients, and they have now appeared in public on several occasions with splendid success. Their efforts, combined with that of a minstrel troupe of about 20 patients, have been an important factor in dispelling the usual evening depression, so noticeable in these cases. In addition, "amateur" nights are held once a week and have been the means of discovering much talent and producing great amusement amongst the patients themselves, who take full charge for the evening. One evening a week is devoted to the cinema, instructional and topical films being shown. The remaining evenings of the week are taken up by various concert companies from outside. In this way no evening of the week is without an entertainment of some kind, including Sunday, when a sacred concert is given, usually by one of the neighbouring choirs.

4. *Games.*—All the ordinary indoor games are fully supplied in the recreation-room, including billiard and bagatelle tables. On completion of the preliminary preparation of grounds and with the approach of warmer weather, an enclosed field will be devoted to tennis, croquet, bowls, and archery. We are provided with sets of all these. A larger field will be devoted to cricket, football, baseball, and push-ball. In addition, three tennis courts are laid out on an asphalte quadrangle in our last addition to the hospital. Arrangements have been made to hold sports competitions as fortnightly affairs.

Educational.—Each physical department is under a specially qualified man known as "Sergeant Instructor," and patients showing any special aptitude in any particular branch will be afforded every facility to qualify themselves.

A fully equipped miniature rifle-range is installed in charge of a competent musketry instructor. Active rivalry between all the different wards has been initiated and fostered by means of a challenge cup, open to patients only, which is retained for one month by the winners, who also receive special prizes. A combined team has also been formed who compete against various outside rifle clubs. This has been the means of interesting a large number of patients, and has been of great value in restoring their nerve and confidence, and we consider it one of our most valuable auxiliaries.

A large general library has been formed, catalogued, and is handled in a similar manner to public ones.

In conclusion, the results so far obtained have been distinctly gratifying, and with fuller knowledge and more comprehensive equipment they should be still further improved upon. Those who are discharged to duty are valuable to their regiments on their return because they are not novices in the art of war, but soldiers trained in the school of experience of modern warfare. Those discharged to light duty and as permanently unfit for further military service have received a partial training along whatever lines their own inclination lies, which will at least place them in a more favourable position to be of future value to their country, and demonstrates to their own satisfaction that they are not merely useless members of the community to which they belong.

MARYLEBONE MEDICAL WAR COMMITTEE.—A meeting of the registered medical practitioners of the borough of St. Marylebone will be held, by kind permission of the Royal Society of Medicine, in the Barnes Hall, 1, Wimpole-street, on Monday next, at 9 P.M., to elect a committee. The Provisional Committee not being a body elected to deal with the provisions of the Military Service Act, 1916 (Session 2), the Central Medical War Committee has directed that a local committee representing all the practitioners of the borough should be elected as soon as possible, so that it may obtain the necessary recognition from the Army Council. Nominations (with the signed consent of the nominee) must be sent to Mr. Charles Ryall, 62, Harley-street, chairman of the Provisional Committee, immediately, or they will not reach him, as is necessary, two days before the date of the meeting. It will be remembered that according to the Regulations for Professional Committees under the Military Service Acts, 1916 (THE LANCET, June 10th, p. 1195), the approval of the Army Council is necessary for the recognition of any Local Professional Committee appointed by the Central Committee.

AT a joint meeting of the Local Medical War Committee and the medical men of military age in the Southampton area the following resolution was adopted:—

That this meeting considers that, judging by the position in Southampton, no more doctors can be spared unless the Government grants statutory powers to the Local Medical War Committee to mobilise the whole profession in each area to organise the work.

HOME FOR BLIND SAILORS AND SOLDIERS AT TORQUAY.—A house at Babbacombe, Torquay, has been given by Mr. and Mrs. D. Hooper as a hostel for blind sailors and soldiers. It was recently opened and 14 patients were admitted. There is accommodation for 16 cases.

THE LADY HARDINGE HOSPITAL AND INDIAN SOLDIERS' FUND.—A report by Lieutenant-Colonel F. F. Perry, C.I.E., I.M.S., the officer commanding, on the Lady Hardinge Hospital at Brockenhurst, to which an introduction is supplied by Surgeon-General Sir Havelock Charles, G.C.V.O., is a document of considerable value, inasmuch as it forms a guide as to how a hospital for Indians in England should be managed. The hospital was opened in January, 1915, and closed its doors in March of this year, during which time 2629 men were admitted. The mortality-rate (1·4 per cent.) was very satisfactory, as the hospital received the most serious cases, those less ill being sent to Brighton and Bournemouth Hospitals for Indians. The cost per bed, of which there were 520, was £1 17*s.* 4*d.* per week. The total expenditure from the opening to the closing of the hospital was £30,389. Interesting details as to diets are given in the report, which is well illustrated and contains a plan of the hospital. Although the hospital is closed, the work of the Indian Soldiers' Fund continues to expand in many directions. In addition to the vast supplies of clothing

and comforts which continue to be sent to the Indian forces in East Africa, Mesopotamia, and Egypt, as well as to the Indian Cavalry Corps, the Fund is providing food and simple luxuries for 700 Indian prisoners of war in Germany, and is now faced with the task of endeavouring to supply comforts to over 9000 Indian prisoners who are interned in Turkey. Subscriptions should be sent to 1, Carlton House-terrace, S.W.

PHYSICAL CLINIQUE FOR WOUNDED AND DISABLED SOLDIERS.—This clinique is about to be opened at 126, Great Portland-street, W. The treatment, which is to be free of charge, will be under the direction of an honorary medical and surgical staff. In addition to the more familiar physical remedies (hot-air and electrical baths, douches, massage, and manipulation), the clinique is furnished with whirlpool baths for the local treatment of stiff and disabled limbs, and with a complete series of apparatus for mechanical treatment. Members of the medical profession are invited by the committee and medical staff to view the clinique on Monday, Tuesday, and Wednesday, June 26th to 28th. Cases will be received for treatment on and after Monday, July 3rd, at 2.30 P.M. The list of the honorary medical and surgical staff is as follows:—Consulting Physicians: Sir Thomas Barlow and Sir Lauder Brunton. Consulting Surgeons: Sir Rickman Godlee, Sir Alfred Pearce Gould, and Mr. Wilfred Trotter. Physicians: Sir John Collie, Dr. Hinds Howell, Dr. Campbell McClure, and Dr. Fortescue Fox. Surgeons: Mr. Jackson Clarke, Mr. Laming Evans, and Mr. Lawrie McGavin.

THE HOSPITAL SAINT-RAMBERT AT LYONS.—The military hospital Saint-Rambert maintained by the Wounded Allies Relief Committee has been doing valuable work since its inauguration last month. The hospital, which was formerly known as the Lycée Saint-Rambert, is beautifully situated in a wooded park overlooking the Saone and stands on a high level, affording a magnificent view of the country around. The wards are large, light, and airy, and will accommodate 400 patients, and some of the wounded from Verdun are now under treatment there. The Saint-Rambert staff consists of two English surgeons, a colonial lady house surgeon, fully trained nurses, and a certain number of V.A.D.'s. The committee has spent a considerable sum on improving the hygienic arrangements of the building, equipping an operating theatre, and providing an X ray outfit.

RELIEF FOR WOUNDED SERBIAN SOLDIERS.—For the relief of sick and suffering Serbian soldiers the Wounded Allies Relief Committee has shipped to Corfu quantities of hospital stores of all kinds that are urgently needed both by the Committee's own hospital staff at Corfu and by the Serbian Red Cross Society. The goods despatched include 4 bales, each containing 100 pairs of sheets, thousands of roller bandages, many-tailed bandages, and swabs, quantities of wool, 13 pairs of operating stockings, hundreds of splints, 24 pillows, 8 pneumonia jackets, 6 leg-sets, and numerous packages of drugs and other hospital requisites, mosquito netting, clothing, lamps, candles, and so on.

A USEFUL WAR-TIME DIRECTORY.—The Women's Emergency Corps and Imperial Health Association are to be congratulated on the issue to the public in pamphlet form of the list which these two bodies have compiled for their own use of societies engaged in war work. The societies are given in alphabetical order, together with addresses and brief indications of their work, and the guide will be found a valuable help to those who wish to know what is being done in the different departments of war work and the societies who are responsible for doing it. The price of the directory is 6*d*., and it can be obtained at the Women's Imperial Health Association, 7, Hanover-square, W., or at the Women's Emergency Corps, 15, York-place, Baker-street, W.

WOODCOTE PARK CONVALESCENT CAMP, EPSOM.—Owing to the energetic work of the commander of this camp, Surgeon Lieutenant-Colonel C. R. Kilkelly, C.M.G., M.V.O., the inmates, some 4000, have been provided with every possible means of suitable recreation. Of the eight divisions into which the camp is divided, four have been allotted to British troops, two to Canadian troops, and one each to men of the Australian and New Zealand contingents. The secretary of the recreation committee is Lord Killanin.

Medical News.

CENTRAL MIDWIVES BOARD.—Special meetings of the Central Midwives Board were held at Caxton Hall, Westminster, on June 14th, 15th, and 16th, with Sir Francis H. Champneys in the chair. A number of midwives were struck off the roll, the following charges, amongst others, having been brought forward: Neglecting to make use of the antiseptic precautions prescribed by Rules E. 3 and 7; the presentation being abnormal the midwife did not explain that the case was one in which the attendance of a registered medical practitioner was required, as prescribed by Rule E. 20 (3); the presentation being as aforesaid she did not hand to the husband or the nearest relative or friend present the form of sending for medical help, properly filled up and signed by her, in order that this might be immediately forwarded to the medical practitioner, as required by Rule E. 19; the child being stillborn and no registered medical practitioner being in attendance at the time of birth the midwife neglected to notify the local supervising authority thereof, as required by Rule E. 21 (1) (*c*). Not being scrupulously clean in every way, as required by Rule E. 1. That the midwife did not when attending her patients wear a clean dress of washable material that can be boiled, such as linen, cotton, &c., and over it a clean washable apron or overall, as required by Rule E. 1. The placenta and membranes not having been completely expelled two hours after the birth of the child, the midwife did not explain that the case was one in which the attendance of a registered medical practitioner was required, as prescribed by Rule E. 20 (3). That being engaged to attend as a midwife at a confinement, and being summoned to the patient to conduct the confinement, the midwife was guilty of misconduct in that she arrived at the patient's house drunk and incapable of rendering any assistance; that during her subsequent attendance as a midwife on the patient she neglected to take and record the pulse and temperature of the patient at each visit, as required by Rule E. 13. The midwife's appliances being dirty and ill-kept, contrary to Rule E. 1, and she did not keep her register of cases as required by Rule E. 23.

BRITISH RED CROSS SOCIETY.—The secretary's monthly report for May on the County of London Branch of this society is not marked by any very striking feature, but disappointment is expressed that members from other divisions have not taken advantage of the opportunities available in Marylebone and Westminster for special training in air-raid relief duties. At the Weir V.A.D. Hospital, Kensington, classes have been inaugurated for instruction in X ray work, as there is a demand for X ray operators. It is also pointed out that applications for practical hospital training are far short of the opportunities now available, and that it is found impossible to fill the vacancies at most of the hospitals where Red Cross members are admitted.

LITERARY INTELLIGENCE.—The Crown Prince of Serbia has given his photograph for reproduction in a book which will shortly appear written by Mr. and Mrs. James Berry, Mr. W. L. Blease, and other members of the party, entitled "The Story of a Red Cross Unit in Serbia," and has allowed the volume to be dedicated to him. The book, which is to be published by Messrs. J. and A. Churchill, deals with the recent history and the aims of the Serbs, as well as with the exciting travelling and other experiences of the mission, the establishing of hospitals, sanitation, and the treatment of a severe epidemic of typhus. It tells of the Austrian invasion and shows how the unit fell into the hands of the enemy. The volume is illustrated by photographs taken by various members of the party.

A MIDWIVES BILL FOR IRELAND.—At a meeting of the President and Fellows of the Royal College of Physicians of Ireland held on June 16th the College adopted a resolution urging on the Government the pressing necessity which exists for the passing of a Midwives Bill for Ireland, which is now the only part of the United Kingdom without legislative control of midwives. Such a Bill is needed to protect lying-in women, to control infant mortality, and to enable Irish-trained midwives to take their proper place in the ranks of the registered midwives of the United Kingdom.

PRESENTATIONS TO MEDICAL OFFICERS. — On June 14th, at the Ford Military Hospital, Plymouth, Major Reginald H. Lucy, R.A.M.C. (T.), was presented with a silver salver, suitably inscribed, by his professional colleagues, on the occasion of his relinquishing his commission. Lieutenant-Colonel H. Woolmington Webber, R.A.M.C. (T.), the commanding officer, made the presentation.—A silver flask, inkstand, and Treasury note case, suitably inscribed, were presented to Lieutentant-Colonel John Kyffin, R.A.M.C. (T.), Officer Commanding 5th Southern General Hospital, Portsmouth, on June 14th by the Sergeants' Mess, on the occasion

of his departure for foreign service. Major R. A. Dove, Major C. A. Scott Ridout, Captain C. H. Saunders, Captain M. H. Way, Captain H. B. Taylor Morgan, and Captain H. Lloyd Driver, from the same hospital, are accompanying him to a hospital abroad.

RESEARCH DEFENCE SOCIETY.—On account of the war, the annual general meeting of the Research Defence Society has been postponed till the autumn.

POOR-LAW MEDICAL OFFICERS' ASSOCIATION OF ENGLAND AND WALES.—The annual general meeting of this association will take place at the offices of the association, 9, Copthall-avenue, London, E.C., on Friday, July 7th, at 4 P.M.

HOSPITAL SUNDAY: SPECIAL NUMBER OF THE "HOSPITAL."—The Hospital Sunday Special Number contains the usual useful summary of the hospitals and their special needs and gives the charitable public convincing data for soliciting their generosity. The striking summary entitled "A Single Year's Roll-call of the Sick," with its graphic representation of the nearly 2,000,000 patients treated at the voluntary hospitals and dispensaries of London and the infectious hospitals of the Metropolitan Asylums Board, should leave no single British subject in doubt of the claim on him or her of Hospital Sunday.

THE HIGHER TRAINING OF MIDWIVES.—At the Mansion House on June 27th, at 3.30 P.M., the Lord Mayor will preside over a meeting, the object of which is to assist the National Training School for District Midwives. The meeting will be addressed by Lord Balfour of Burleigh, Sir Dyce Duckworth, Lady Betty Balfour, and Dr. Barbara Tchaykovsky, and a statement will be made by Miss Alice Gregory on the progress of the British Hospital for Mothers and Babies, Woolwich.

DONATIONS AND BEQUESTS.—The late Sir Gerard Augustus Lowther, Bart., G.C.M.G., C.B., left by his will £1000 to St. George's Hospital.—By the will of the late Sir George Augustus Pilkington the testator left £1000 each to the Southport Infirmary and the Southport District Nursing Society.—By the will of the late Mrs. Sarah Halsted Sandford, of Sandford, Salop, the testatrix left among other legacies £1000 each to the Whitchurch Infirmary and the Alexandra Hospital, Rhyl.

THE BORDEAUX FAIR.—The town of Bordeaux has decided to inaugurate a Bordeaux Fair, which will be held in the splendid Square of the Quinconces from Sept. 5th to 20th next. It will be open to all inventors in France, the colonies, and allied and neutral countries. The offices of the committee and of the administration are at the town hall, where application may be made for admission. The list of entries will be closed on July 20th next.

Sir Alfred Keogh, K.C.B., Director-General of the Army Medical Service, has been elected an Honorary Freeman of the Society of Apothecaries of London "in recognition of his peculiar services to the State and the medical profession."

Dr. R. A. Fleming has been appointed on the Staff of Officers of the King's Body Guard for Scotland (Royal Company of Archers) in place of the late Dr. W. A. Jamieson.

Parliamentary Intelligence.

HOUSE OF COMMONS.

WEDNESDAY, JUNE 21ST.

Medical Men and Petrol Supplies.

Mr. MONTAGU, Secretary to the Treasury, intimated that the Government would not proceed with Clause 11 of the Finance (No. 2) Bill which provides for an increased duty on licences on motor-cars. He stated that the Government proposed to adopt another method for checking the consumption of petrol. It was in contemplation that a Board of Central Control of the petrol stocks in this country would be set up, and petrol would only be issued on a permit. That permit would allow a consumer a specified amount of petrol for a specified purpose over a specified period. The consumer would have to pay in licence duty 6*d.* for every gallon that the permit enabled him to obtain. If he did not take out all the petrol in that time he would be entitled to a refund. Medical men would get their permits at half rates. The old tax on cars and the old duty on petrol would go on. The new duty would be on the permit. Clause 11 was deleted from the Bill. Further steps to authorise the proposed new arrangement will be taken.

BOOKS, ETC., RECEIVED.

ARNOLD, EDWARD, London.
A Year Ago: Eyewitness's Narrative of the War from March 20th to July 18th, 1915. By Lieutenant-Colonel H. D. Swinton, D.S.O., R.E., and Captain Earl Percy. Price 2*s.* net.

BAILLIÈRE, TINDALL, AND COX, London.
A Text-book of Immunology and Serology for Students and Practitioners. By E. Simon, B.A., M.D. Third edition, revised and enlarged. Price 14*s.* net.

BRITISH DENTAL ASSOCIATION, Hanover-square, W.
Treatment in Germany of Gunshot Injuries of the Face and Jaws. Translated and Abstracted from Recent German Publications. By W. H. Dolamore, L.R.C.P., M.R.C.S., L.D.S. Price 5*s.* net.

CONSTABLE AND CO., LIMITED, London, AND HOUGHTON MIFFLIN COMPANY, Boston and New York.
Psychology of Relaxation. By G. T. Patrick. Price 5*s.* net.

FROWDE, HENRY, AND HODDER AND STOUGHTON, London.
Nerve Injuries and their Treatment. By Purves Stewart, M.A., M.D., F.R.C.P., Temporary Colonel, A.M.S., and Arthur Evans, M.S., M.D., F.R.C.S., Captain, R.A.M.C.(T.). Price 8*s.* 6*d.*

HARRISON AND SONS, Pall Mall, W.
Links in a Chain of Research on Syphilis (Oxidation and Reduction) (Hunterian Lectures, 1916). By J. E. R. McDonagh, F.R.C.S. Price 5*s.* net.

KEGAN PAUL, TRENCH, TRÜBNER AND CO., London.
Abnormal Children. By Bernard Hollander, M.D. Price 3*s.* 6*d.* net.

LONGMANS, GREEN, AND CO., London.
Milk and its Hygienic Relations. By Janet E. Lane-Claypon, M.D., D.Sc. Lond., Assistant Medical Inspector under the Local Government Board. Price 7*s.* 6*d.* net.

WRIGHT, JOHN, AND SONS, Bristol.
I.K. Therapy in Pulmonary Tuberculosis. By William Barr, M.D., D.Sc. Glasg., D.P.H. Camb. Price 3*s.* 6*d.* net.
Pye's Surgical Handicraft. Edited and largely rewritten by W. H. Clayton-Greene, B.A., M.B., B.C. Cantab., F.R.C.S. Eng. Seventh edition. Price 15*s.* net.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

BARRETT, ADA, M.B., B.S. Manch., has been appointed Temporary Assistant School Medical Officer for Cheshire.

DONALD, C. W., M.D., F.R.C.S. Edin., Honorary Physician to the Cumberland Infirmary, Carlisle.

HICHENS, FRANK, M.D., B.S. Lond., M.R.C.S., L.S.A., D.P.H. Lond., Medical Officer for the Stithians District by the Redruth (Cornwall) Board of Guardians.

LAUDER, HELEN, L.R.C.P. & S. Edin., L.F.P.S. Glasg., School Medical Officer at Hyde.

ROBERTSON, W. H., M.B., C.M. Edin., Certifying Surgeon under the Factory and Workshop Acts for the Chirnside District of the county of Berwick.

SIBBALD, IAN GRAHAM, M.B., C.M. Edin., *pro tem.* Medical Officer of Health for the Crewkerne (Somerset) Urban District Council.

TUXFORD, R., M.R.C.S., L.R.C.P. Lond., Medical Officer to the Union and for the Parish by the Boston Board of Guardians.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).
When the application of a Belgian medical man would be considered the advertisers are requested to communicate with the Editor.

BARNSLEY COUNTY BOROUGH.—Assistant Tuberculosis Officer and Resident Medical Officer at Mount Vernon Sanatorium. Salary £300 per annum, with board, &c.

BIRMINGHAM AND MIDLAND EYE HOSPITAL, Church-street.—Resident Surgeon. Salary £200 per annum, with board, &c.

BOLINGBROKE HOSPITAL, Wandsworth Common, S.W.—Resident Medical Officer and House Surgeon. Salary £300 per annum and £200 per annum respectively, with board, &c.

BOLTON INFIRMARY AND DISPENSARY.—Female Third House Surgeon. Salary £180 per annum, with board, &c.

BRISTOL ROYAL INFIRMARY.—House Surgeons and House Physicians. Salary at rate of £120 per annum, with board, &c.

BURY INFIRMARY.—Junior House Surgeon. Salary £150 per annum, with board, &c.

DERBY, DERBYSHIRE ROYAL INFIRMARY.—House Surgeon. Salary £200 per annum, with board, &c.

DUDLEY, GUEST HOSPITAL.—Senior Resident Medical Officer. Salary £150 per annum, with board, &c.

GREAT NORTHERN CENTRAL HOSPITAL, Holloway-road, N.—House Surgeon for six months. Salary at rate of £100 per annum, with board, &c.

GREAT YARMOUTH HOSPITAL.—House Surgeon, unmarried. Salary £200 per annum, with board, &c.

HUDDERSFIELD ROYAL INFIRMARY.—Senior House Surgeon. Salary £150 per annum, with board, &c.

HULL, VICTORIA HOSPITAL FOR SICK CHILDREN.—Female House Surgeon. Salary £100 per annum, with board, &c.

LEEDS CITY HOSPITALS FOR INFECTIOUS DISEASES AND TUBERCULOSIS.—Two Certified Assistant Medical Officers. Salary at rate of £250 per annum each, with board, &c.

LONDON TEMPERANCE HOSPITAL, Hampstead-road, N.W.—Assistant Resident Medical Officer for six months. Salary at rate of £120 per annum, with board, &c.

MANCHESTER CHILDREN'S HOSPITAL, Pendlebury.—Locum Tenens Female Resident Medical Officer.

MANCHESTER NORTHERN HOSPITAL FOR WOMEN AND CHILDREN, Park-place, Cheetham Hill-road.—Female House Surgeon. Salary £120 per annum, with board, &c.

OXFORD EYE HOSPITAL.—House Surgeon.

PLYMOUTH, SOUTH DEVON AND EAST CORNWALL HOSPITAL.—House Physician. Salary £150 per annum, with board, &c.

QUEEN CHARLOTTE'S LYING-IN HOSPITAL, Marylebone-road, N.W.—Assistant Resident Medical Officer for four months, and Senior Resident Medical Officer for following four months. Salary at rate of £60 per annum first four months and £80 per annum following four months, with board, &c.

QUEEN'S HOSPITAL FOR CHILDREN, Hackney-road, Bethnal Green, E.—House Physician and House Surgeon for six months. Salary £100 per annum each, with board, &c.

ST. BARTHOLOMEW'S HOSPITAL, E.C.—Assistant Administrator of Anæsthetics.

SHEFFIELD ROYAL INFIRMARY.—House Physician. Salary £120 per annum, with board, &c.

SOUTH LONDON HOSPITAL FOR WOMEN.—Female Pathologist. Salary at rate of £250 per annum.

SUNDERLAND ROYAL INFIRMARY.—Female House Surgeon. Salary £150 per annum, with board, &c.

WROTHAM PARK, KENT, 12TH MOUNTED BRIGADE FIELD AMBULANCE (T.F.).—Two Medical Officers.

THE Secretary of State for the Home Department gives notice of a vacancy for a Medical Referee under the Workmen's Compensation Act, for County Court Circuit No. 50, attached more particularly to the Eastbourne, Hastings, and Rye County Courts. Applications should reach the Private Secretary, Home Office, not later than July 1st next.

THE Chief Inspector of Factories, Home Office, London, S.W., gives notice of a vacancy as Certifying Surgeon under the Factory and Workshop Acts at Ormskirk, Lancashire.

Births, Marriages, and Deaths.

BIRTHS.

BURGESS.—On June 19th, at Milverton Lodge, Victoria Park, Manchester, the wife of Arthur H. Burgess, Major, R.A.M.C., of a daughter.

ELLIS.—On June 15th, at Wheeleys-road, Edgbaston, Birmingham, the wife of F. W. Ellis, Lieutenant-Colonel, R.A.M.C. (T.), of a son.

FFRENCH.—On June 15th, at 44, Ashley-gardens, S.W., the wife of Major E. G. Ffrench, M.D., F.R.C.S.E., of a daughter.

HAY.—On June 17th, at 14, Vicarage-gardens, Kensington, W., the wife of Dr. K. R. Hay, of a daughter.

JULER.—On June 5th, at Cavendish-square, W., the wife of F. A. Juler, F.R.C.S., of a daughter.

JUSTICE.—On June 15th, at Palace-gardens-terrace, W., the wife of Major W. A. Justice, I.M.S., Madras, of a son.

PAYNE.—On June 12th, at Lansdowne House, Alton, Hants, the wife of O. V. Payne, M.B., B.C., of a son (still-born).

RODGERS.—On June 13th, at Hollins-lane, Winwick, Warrington, the wife of Fred Rodgers, M.D., Major, R.A.M.C. (temporary), of a son.

SPEIRS.—On June 13th, at Old Kent-road, S.E., the wife of T. Orr Speirs, M.D. Glasg., of a son.

THURLOW.—On June 10th, at Easdale, Frant-road, Tunbridge Wells, to Dr. and Mrs. Basil L. Thurlow, a daughter.

MARRIAGES.

ADAMSON—TURNBULL.—On June 15th, at St. Mary's, Harrow-on-the-Hill, J. D. Adamson, Lieutenant, R.A.M.C., to Edna Turnbull, eldest daughter of Mr. and Mrs. J. H. Turnbull, of Winnipeg, Canada.

CAMPBELL—GALLAGHER.—On June 19th, at St. Peter-in-Chains, Stroud Green, Lieutenant George A. Campbell, R.A.M.C., to Sara (Cissie), eldest daughter of Sir William and Lady Gallagher.

COX—COATE.—On June 14th, at St. Matthew's Church, Luton, Beds, William Joseph Cox, M.B., Ch.B., D.P.H., to Frances Henrietta Coate, youngest daughter of the Rev. Harry and Mrs. Coate, of St. Matthew's Vicarage, Luton.

CROWTHER—WOODLEY.—On June 14th, at Emmanuel Church, Plymouth, Captain Charles Rowland Crowther, R.A.M.C., to Kathleen Olive Mary, daughter of the late George W. A. Woodley, of Stonehenge, Natal, and niece of Mr. and Mrs. Woodley, of Evadne, Mannamead, Plymouth.

FRASER—BAILEY.—On June 13th, at Golden Hill Parish Church, by the Rev. J. H. Bailey, Vicar of Norton, Letchworth, brother of the bride, and the Rev. Canon Hughes, Rector of Tarporley, Captain Forbes Fraser, R.A.M.C., of Bath, to Agnes Mary, daughter of the Rev. G. R. Bailey, Vicar of Golden Hill and Rural Dean of Newcastle, and Mrs. Bailey.

LINK—FOWLER.—On June 17th, at Ilford, O. C. Link, M.B., B.S., R.A.M.C., to Grace Madeline, eldest daughter of the late W. Fowler and Mrs. Fowler, Ilford.

MACKAY—TRAIN.—At the United Free Church, Southend, Argyll, on June 1st, by the Rev. J. G. Train (formerly of Buckhaven, Hull, and Norwood, S.E.), Duncan Matheson Mackay, M.D., Hull, to Anna Gilkison, third daughter of the Rev. J. G. Train.

SHELLEY—RASHLEIGH.—On June 17th, at St. Matthias's, Earl's Court, Captain L. W. Shelley, R.A.M.C., to Beryl Marie Rashleigh.

DEATHS.

ROBERTS.—On June 15th, at The Acacias, Hayling Island, Frank Ernest Roberts, M.R.C.S. Eng., aged 64.

N.B.—A fee of 5s. is charged for the Insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

THE DESTRUCTION OF COCKROACHES.

IN reply to correspondents who suggest that a mixture of equal parts of flour and plaster-of-Paris sprinkled on the floor is a simple and effective remedy against cockroaches, Dr. J. J. H. Holt writes: "Plaster-of-Paris mixed with flour was one of the first remedies I tried, with the addition of a supply of water in a separate dish. No effect was observed in over 100 hours' observation and the remedy appears perfectly useless. It is one of a number of methods being tried every night in thousands of houses without result." Dr. Holt adds that Professor H. Maxwell Lefroy recommends (Bull. No. 23, Agricultural Research Institute, Calcutta, 1911) borax "as a deadly poison to cockroaches if put under cupboards, &c., where cockroaches dwell." Dr. Holt found in his experiments that borax had no appreciable effect: "cockroaches could crawl upon it for over 100 hours and be quite lively at the end of that time. On the other hand, boracic acid had a distinct effect, killing, as stated, in 25 hours' contact." Dr. Holt suggests that the observations which he has made upon the cockroach "might serve in dealing with other insect pests, especially lice, in the army. The need for a dry dusting powder has been expressed. I think sodium fluoride would probably be found to answer. For the liquid series wood naphtha is one of the most effective remedies and has the advantage of being less volatile than petrol." In reply to the letter of Mr. E. Howarth, F.Z.S., Dr. Holt writes: "It would have been more useful if the writer had definitely specified what are the active ingredients of the remedy which he recommends. Blattis is much like the pastes mentioned in my article, compounded of flour, water, and phosphorus. I could point to many instances where it has been patiently tried and failed. Similarly with Dalmatian insect powder. All cockroach poisons first turn the insect on their backs, when, as another correspondent remarks, they can be swept up in the morning. But if examined carefully they will be found to be stupefied, not dead, in such a short time. If the cockroaches remain in contact with the powder long enough it certainly will kill them, but the powder acts chiefly in virtue of its volatile oil, as, if the oil is extracted with ether, the remaining powder is much less fatal."

WANTED, A HOME.

To the Editor of THE LANCET.

SIR,—I want to find a place for two months or so for a strong healthy young woman who expects her accouchement in the early autumn. She will, I understand, have to be moved into Queen Charlotte's Hospital, but not until shortly before the expected birth of the infant. In the meantime she is unable to remain in her present situation or to go home. Any suggestions for assistance will be gratefully received by

Yours faithfully,

June 15th, 1916. M.D.

ENTERPRISE IN MEDICINAL HERB GROWING.

A CORRESPONDENT calls attention to the necessity for enterprise if the culture of medicinal herbs is to be made a financial success in this country. An example of such enterprise was given in a recent issue of the *Garden*. For many years a poorly dressed man used to offer to a British wholesale drug-house a quantity of hemlock seed at half the price generally asked. Questioned as to how he managed to sell it so cheaply, he replied: "Early in the year I fill my pockets with seed and go out into the country. Whenever I come across a good wide hedgerow I sow the seed all along it. Later in the year, when the plants have grown and seed has formed, I again visit the hedges and call the attention of farmers to the noxious weed, offering to cut it out and take it away at the modest price of 1s. a hedge. So you see I get my land for nothing and, in addition, get paid for cutting my own harvest."

CHAUFFEURS FOR MEDICAL MEN.

HEARING of the difficulty in which medical men are placed for chauffeurs at the present time "Engineering Graduate" writes to offer his services. He has had blackwater fever and is exempt from military service. He claims to be a steady driver and willing cheerfully to drive any doctor in the evenings and night, as well as to assist him in secretarial work. He now holds a position as acting paymaster which he would sacrifice in order to assist a surgeon at his work.

SURFACE DRAINS.

An Old Subscriber states the following case: "In a small country village where enteric fever has been rather prevalent for some years past and the district council are anxious to abate the nuisance, would the following procedure be deemed efficient and considered sanitary? It is not considered feasible to construct a main sewer with branch drains, no water being available for flushing. It is proposed to drain away the surface water and other liquid matter to a cesspool erected a considerable distance to the rear of the cottages and to run surface drains or paved channels from each house therein. The cesspool to be covered in and to be cleaned periodically." The information given is insufficient to enable us to form a satisfactory opinion. The number of houses involved in the scheme; the distance between the houses and the cesspool; the nature of the ground covered by the surface drains; what fall is available—are a few of the data requisite to the proper understanding of the problem. Speaking generally, surface drains are ill-suited for the purpose indicated, as it is undesirable that children should play in the neighbourhood of such open channels. Surface drains are liable to attract large numbers of flies which may cause contamination of foodstuffs in the adjoining houses. Upon the whole, the suggested scheme cannot be considered to be either efficient or sanitary.

LAWRENCE'S "TREATMENT OF HERNIA."

THE book of which mice have robbed the Royal Society of Medicine was (Sir) William Lawrence's essay entitled "The Treatment of Hernia," first published in 1806. The author was only 23 years old at the time and less than a year a member of the College of Surgeons of England, but the essay was awarded the Jacksonian prize and went through five editions.

A. H. W. A.—Section 5 (a) of the Local Government (Emergency Provisions) Act, 1916, gave effect to the recommendation of the Committee on Retrenchment that the fee of a medical practitioner for a notification of infectious disease should be reduced from 2*s.* 6*d.* to 1*s.* The Act came into force on May 17th, and its provisions are not retrospective.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY, Burlington House, London, W.

THURSDAY.—4.30 P.M., Papers:—Prof. J. Joly: The Genesis of [illegible]oic Haloes.—Mr. C. T. R. Wilson: On some Determinatio[illegible]th Sign and Magnitude of Electric Discharges in Li[illegible]ng Flashes.—Dr. T. Goodey: Further Observations on Proto[illegible] in Relation to Soil Bacteria (communicated by Prof. F. W. Gamble).—Dr. M. C. Stopes: New Bennettitean Cones from the British Cretaceous (communicated by Dr. A. Strahan).—And other papers.

ROYAL SOCIETY OF ARTS, John-street, Adelphi, W.C.

THURSDAY.—4.30 P.M., Paper:—Sirdar Daljit Singh, C.S.I.: The Sikhs.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, road, W.

MONDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye. Dr. Simson: Diseases of Women.

TUESDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations. Dr. Simson: Diseases of Women.

THURSDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye.

FRIDAY.—10 A.M., Dr. Simson: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Eye Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY.—Clinics:—10.30 A.M., Surgical Out-patients (Mr. B. Gillespie). 2.30 P.M., Medical Out-patients (Dr. T. R. Whipham): Gynæcological Out-patients (Dr. Banister). 3 P.M., Medical In-patients (Dr. R. M. Leslie).

TUESDAY.—2.30 P.M., Surgical Operations (Mr. Carson). Clinics:—Medical Out-patients (Dr. A. G. Auld); Surgical Out-patients (Mr. Howell Evans); Nose, Throat, and Ear Out-patients (Mr. C. H. Hayton). Radiography (Dr. Metcalfe). 3.30 P.M., Medical In-patients (Dr. A. J. Whiting).

WEDNESDAY.—Clinics:—2.30 P.M., Throat Operations (Mr. C. H. Hayton). Children Out-patients (Dr. T. R. Whipham); Eye Out-patients (Mr. R. P. Brooks); Skin Out-patients (Dr. H. W. Barber). 5.30 P.M., Eye Operations (Mr. R. P. Brooks). 4.30 P.M., Special Demonstration: Mr. A. S. Worton; Selected Eye Cases.

THURSDAY.—2.30 P.M., Gynæcological Operations (Dr. A. E. Giles). Clinics:—Medical Out-patients (Dr. A. J. Whiting); Surgical Out-patients (Mr. Carson); Radiography (Dr. Metcalfe). 3 P.M., Medical In-patients (Dr. R. M. Leslie).

FRIDAY.—2.30 P.M., Surgical Operations (Mr. Howell Evans). Clinics:—Medical Out-patients (Dr. A. G. Auld); Surgical Out-patients (Mr. B. Gillespie); Eye Out-patients (Mr. R. P. Brooks).

THE THROAT HOSPITAL, Golden-square, W.

MONDAY.—5.15 P.M., Special Demonstration of Selected Cases.
THURSDAY.—5.15 P.M., Clinical Lecture.

ROBERT BARNES HALL, 1, Wimpole-street, W. (by permission of the Royal Society of Medicine).

WEDNESDAY.—8 P.M., Mrs. Mary Scharlieb, M.D.: Inherited Disease in Children (illustrated by the epidiascope). (Lecture II.)

The following magazines, journals, &c., have been received:—Journal of Obstetrics, Proceedings of the Royal Society of Medicine, Annales de Médecine, Tropical Diseases Bulletin, Modern Hospital Bulletin of Johns Hopkins Hospital, Bulletin of the Office International d'Hygiène Publique, American Journal of Orthopædic Surgery, Albany Medical Annals, Ellingwood's Therapeutist, &c.

EDITORIAL NOTICES.

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITOR," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention should be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, *and when accompanied by blocks it is requested that the name of the author, and if possible of the article, should be written on the blocks to facilitate identification.*

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

We cannot prescribe or recommend practitioners.

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

Letters relating to the publication, sale, and advertising departments of THE LANCET should be addressed "To the Manager."

We cannot undertake to return MSS. not used.

MANAGER'S NOTICES.

THE INDEX AND TITLE-PAGE TO THE LANCET.
January to June, 1916.

IN view of the Government restrictions upon the supply of paper, and the shortage of paper quite apart from these restrictions, we cannot include, as usual, in all the copies of THE LANCET the Index and the Title-page which are due at the end of this month. The Index and Title-page will, of course, be prepared, and copies will be supplied gratis to subscribers who intimate their wish to receive them to the Manager, THE LANCET Office, 423, Strand, London, W.C. Such application should please be sent in at once.

TO SUBSCRIBERS.

WILL Subscribers please note that only those subscriptions which are sent direct to the Proprietors of THE LANCET at their Offices, 423, Strand, London, W.C., are dealt with by them? Subscriptions paid to London or to local newsagents (with none of whom have the Proprietors any connexion whatever) do not reach THE LANCET Offices, and consequently inquiries concerning missing copies, &c., should be sent to the Agent to whom the subscription is paid, and *not* to THE LANCET Offices.

Subscribers, by sending their subscriptions direct to THE LANCET Offices, will ensure regularity in the despatch of their Journals and an earlier delivery than the majority of Agents are able to effect.

THE COLONIAL AND FOREIGN EDITION (printed on thin paper) is published in time to catch the weekly Friday mails to all parts of the world.

TO COLONIAL AND FOREIGN SUBSCRIBERS.

Subscribers abroad are particularly requested to note the rates of subscriptions given on page 4.

The Manager will be pleased to forward copies direct from the Offices to places abroad at the rates shown, whatever be the weight of any of the copies so supplied.

NEWSPAPERS FOR NEUTRAL COUNTRIES.

Newspapers are not at present being sent forward to neutral European countries unless posted direct from the office of publishers or newsagents who have obtained permission from the War Office for this purpose. The Publisher of THE LANCET has obtained the required permission, and he will forward copies direct from the Office to any neutral country on receipt of instructions.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, June 21st, 1916.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
June 15	30·070	N.E.	...	111	61	49	50	53	Cloudy
,, 16	30·260	N.E.	...	115	63	47	45	50	Cloudy
,, 17	30·214	E.	...	116	66	43	46	51	Cloudy
,, 18	30·010	N.W.	...	103	65	48	47	49	Cloudy
,, 19	29·894	N.W.	...	105	58	49	51	54	Overcast
,, 20	30·120	W.	...	123	67	51	48	56	Fine
,, 21	30·174	W.	...	115	65	51	53	59	Cloudy

Communications, Letters, &c., have been received from—

A.—Mr. J. Vere Arkle, Lond.; Dr. E. L. Ash, Lond.; A. S.; Lieutenant-Colonel W. Alpin, I.M.S.; Author; Dr. Russell Andrews, Lond.; Anglo-American Pharmaceutical Co., Croydon; Miss Lena Ashwell, Lond.; Aberdeen Medico-Chirurgical Society's Library.

B.—Dr. F. A. Brooks, Brighton; Messrs. T. B. Browne, Lond.; Major T. W. Buckley, R.A.M.C.; Bolingbroke Hospital, Lond., Secretary of; Barnsley County Borough, Town Clerk of; Mairie de Bordeaux; Mr. M. Brooks, Ipswich; Sir Henry Burdett, Lond.; Miss C. S. Bremner, Lond.; British Hospital for Mothers and Babies, Woolwich, Secretary of; Messrs. Charles Barker and Sons, Lond.; Captain A. Barr, A.V.C.; Birmingham Medical Institute, Hon. Librarian of; Messrs. W. H. Bailey and Son, Lond.; Dr. S. A. Bonnerjee, Lymington; Messrs. Burroughs, Wellcome, and Co., Lond.; Bristol Royal Infirmary, Secretary of; Birmingham and Midland Eye Hospital, Secretary of.

C.—Mr. F. M. Cartaigne, Lond.; Mr. R. Coombe, Exeter; Messrs. J. and A. Churchill, Lond.; Church of England Temperance Society, Lond., Secretary of; Dr. C. W. Chapman, Mill Hill; Major W. J. Collinson, I.M.S.; Mr. Joseph Cunning, Lond.; Mr. W. E. Le Gros Clark, Lond.; Mr. J. Jackson Clarke, Lond.; Clerical, Medical, and General Life Assurance Society, Lond.; Mr. J. F. Colyer, Lond.; Chadwick Trust, Lond., Secretary of; Central Midwives Board, Lond., Secretary of; C. F. P.; C. W. C.; Mrs. M. Cornwall, Edinburgh; Surgeon F. L. Cassidi, R.N.; Consumption Sanatorium of Scotland, Bridge of Weir, Medical Superintendent of; Rev. G. H. Culshaw, Iver Heath; Mr. W. Cowan, Glasgow.

D.—Messrs. W. Dawson and Sons, Lond; Mr. R. Donald, Lond.; Mr. F. N. Doubleday, Lond.; Dr. Vincent Dickinson, Lond.; Mr. R. Dunstan, Palgnton; Messrs. Dale, Reynolds, and Co., Lond.

E.—Dr. T. Eastes, Folkestone; E. M.

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G.—Mr. Kenneth Goadby, Lond.; Dr. Major Greenwood, Lond.; Mrs. Grieve, Chalfont St. Peter; Mr. E. W. Hey Groves, Bristol; Dr. W. S. Greenfield, Elie; Mr. J. T. Greenlidge, Rugby; Dr. C. D. Green, Bournemouth; Mr. H. Green, Lond.

H.—Major A. F. Hertz, R.A.M.C.; Mr. H. L. Hughes, Banchory; Dr. F. Heatherley, Oswestry; Mr. E. M. Harvey, Lond.; Miss Hollis, Freshwater; Staff Surgeon J. Keogh Humphry, R.N.V.R.; Messrs. Hirschfeld Bros., Lond.; Captain G. S. Hughes, R.A.M.C.; Mr. J. E. Hancock, Hurst Green; Dr. C. W. Hutt, Brighton; Mr. F. Hasler, Lond.; Messrs. A. Heywood and Son, Manchester; Dr. R. W. Harper, Lond.; Mr. W. Huntingdon, St. Andrews; Messrs. C. J. Hewlett and Son, Lond.; Dr. Bernand Hart, Lond.; Miss A. M. Harding, Wells; Mr. Charles J. Heath, Lond.; Dr. H. L. Hamilton, Southampton; Mr. W. S. Humphreys, Longford; Lieutenant-Colonel F. W. H. Davie Harris, Lond.; H. A. W.

J.—Mrs. M. L. Jones, Lond.; Monsieur Jewell, Lond.

K.—Dr. A. B. Kelly, Glasgow; Messrs. D. J. Keymer and Co., Lond.; Mrs. A. Krohn, Lond.; Mr. Stanley B. Kimbell, Lond.

L.—Dr. H. G. Lawrence, Lond.; London and Counties Medical Protection Society, Lond.; Messrs. Lee and Martin, Birmingham; Messrs Loescher and Co., Rome; Local Government Board, Lond., Secretary of; Professor J. N. Langley, Cambridge; Lieutenant J. H. Lloyd, R.A.M.C.(T.); Dr. T. Laffan, Cashel.

M.—Dr. A. T. MacConkey, Elstree; Dr. D. McCarrol, Southampton; Manchester Children's Hospital, Secretary of; Mundesley Sanatorium, Secretary of; Lieutenant J. MacArthur, R.A.M.C.; Maltine Manufacturing Co., Lond.; Maruzen Co., Tokyo; Mr. J. E. R. McDonagh, Lond.; Mr. J. Y. W. MacAlister, Lond.; Dr. J. A. Murray, Lond.; Dr. Hugh A. Macewen, Lond.; Miss Ida Meller, Lond.; Messrs. Mable, Todd, and Co., Lond.; Sir Berkeley Moynihan, Leeds; Mr. F. McClure, Belfast; Medical Research Committee, Lond.; Mr. G. Mayall, Bolton; Dr. F. J. McCann, Lond.; Medical Supply Association, Lond.; Messrs. Maw, Son, and Sons, Lond.; Marylebone Medical War Committee, Lond., Hon. Secretary of; Dr. H. Crichton Miller, Lond.

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